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PUBLIC

BEFORE THE
SURFACE TRANSPORTATION BOARD

INTERMOUNTAIN POWER AGENCY	)	
Complainant,	)	
v.	)	Docket No. 42136
UNION PACIFIC RAILROAD COMPANY	)	
Defendant.	)	

OPENING EVIDENCE OF COMPLAINANT
INTERMOUNTAIN POWER AGENCY

NARRATIVE

INTERMOUNTAIN POWER AGENCY

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Dated: December 17, 2012

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ACRONYMS

The following acronyms are used:

AAR	Association of American Railroads
AEI	Automatic Equipment Identification
AEO	2012 Annual Energy Outlook
AII-LF	All-Inclusive Less Fuel Index, published by AAR
AREMA	American Railway Engineering and Maintenance of Way Association Manual for Railway Engineering
ATC	Average Total Cost
ATF	Across-the-Fence
BNSF	BNSF Railway Company and Predecessors
CAPM	Capital Asset Pricing Model
CMM	Coal Marketing Module
CMP	Constrained Market Pricing
cmp	Corrugated Aluminized Metal Pipe
COE	Cost of Equity
CTC	Centralized Traffic Control
CWR	Continuous Welded Rail
DCF	Discounted Cash Flow
DP	Distributed Power Configuration
DTL	Direct To Locomotive
EIA	Energy Information Administration
EOTD	End of Train Device
FAS-PAS	Fail Safe Audible Signal-Power Activated Switches
FED	Failed/Dragging Equipment Detector
FRA	Federal Railroad Administration
GTM	Gross Ton-Mile
GWR	Gross Weight on Rail
HDF	On-Highway Diesel Fuel Index
IDC	Interest During Construction
IGS	Intermountain Generating Station
IPA	Intermountain Power Agency
IPP	Intermountain Power Project
IPSC	Intermountain Power Service Corporation
IRR	Intermountain Railroad
KCS	Kansas City Southern Railway
LADWP	Los Angeles Department of Water and Power
LMR	Land Mobile Radio
MGT	Million Gross Tons
MITA	Master Intermodal Transportation Agreement
MLO	Manager of Locomotive Operations

MMM	Maximum Markup Methodology
MOW	Maintenance of Way
MP	Milepost
MSDCF	Multi-Stage Discounted Cash Flow
MTO	Manager of Train Operations
PPI	Producer Price Index
PRB	Power River Basin
PTC	Positive Train Control
RCAF-A	Rail Cost Adjustment Factor, adjusted for productivity
RCAF-U	Rail Cost Adjustment Factor, unadjusted for productivity
ROW	Right-of-Way
RSIA	Rail Safety Improvement Act of 2008
R/VC	Revenue-to-Variable Cost
RTC	Rail Traffic Controller Model
SAC	Stand-Alone Cost
SARR	Stand-Alone Railroad
STEO	Short-Term Energy Outlook
T&E	Train & Engine
UP	Union Pacific Railroad Company
URC	Utah Railway Co.
URCS	Uniform Railroad Costing System
USDA	United States Department of Agriculture
VHF	Very High Frequency

CASE GLOSSARY

The following short form case citations are used:

AEPCO 2011	*Ariz Elec. Power Coop., Inc. v. BNSF Ry & Union Pac R R*, NOR 42113 (STB served Nov 22, 2011)
AEP Texas	*AEP Tex. N. Co v. BNSF Ry.*, NOR 41191 (Sub-No. 1) (STB served Sept. 10. 2007)
APS	*Ariz. Pub. Serv. Co. & Pacificorp. v Atchison, Topeka & Santa Fe Ry.*, 2 S.T.B. 367 (1997)
Carolina P&L	*Carolina Power & Light Co. v. Norfolk S Ry*, 7 S.T.B. 235 (2003)
Coal Rate Guidelines or Guidelines	*Coal Rate Guidelines, Nationwide*, 1 I.C.C.2d 520 (1985), *aff'd sub nom. Consol Rail Corp. v United States*, 812 F.2d 1444 (3d Cir. 1987)
Coal Trading	*Coal Trading Corp. v Baltimore & Ohio R.R.. et al*, 6 I.C.C.2d 361 (1990)
Duke/CSXT	*Duke Energy Corp. v. CSX Transp Inc*, 7 S.T.B. 402 (2004)
Duke/NS	*Duke Energy Corp. v. Norfolk S Ry*, 7 S.T.B. 89 (2003)
FMC	*FMC Wyo. Corp. v Union Pac. R.R*, 4 S.T B. 699 (2000)
IPA 2012	*Intermountain Power Agency v. Union Pac. R.R.*, NOR 42136 (STB served Dec. 14, 2012)
KCP&L	*Kan. City Power & Light Co. v. Union Pac. R.R.*, NOR 42095 (STB served May 19, 2008)
Major Issues	*Major Issues in Rail Rate Cases*, EP 657 (Sub-No. 1) (STB served Oct. 30, 2006)
Nevada Power I	*Bituminous Coal – Hiawatha, Utah to Moapa, Nev.*, 6 I.C.C.2d 1 (1989)
Nevada Power II	*Bituminous Coal – Hiawatha, Utah to Moapa, Nev.*, 10 I.C.C.2d 259 (1994)

OG&E	*Okla Gas & Elec. Co v. Union Pac. R.R.*, NOR 42111 (STB served July 24, 2009)
Otter Tail	*Otter Tail Power Co. v. BNSF Ry.*. NOR 42071 (STB served Jan. 27, 2006)
Seminole	*Seminole Elec. Coop, Inc. v CSX Transp., Inc*, NOR 42210 (Complaint filed Oct. 3, 2006)
TMPA	*Tex. Mun. Power Agency v Burlington N & Santa Fe Ry*, 6 S.T.B. 573 (2003)
WFA I	*W. Fuels Ass'n, Inc & Basin Elec Power Coop v. BNSF Ry*, NOR 42088 (STB served Sept. 10, 2007)
WFA II	*W Fuels Ass'n, Inc & Basin Elec Power Coop. v. BNSF Ry.*, NOR 42088 (STB served Feb 18, 2009)
West Texas Utilities	*W. Tex. Utils. Co. v. Burlington N R R*, 1 S.T.B. 638 (1996), *aff'd sub nom Burlington N R R. v STB*, 114 F.3d 206 (D.C. Cir. 1997)
Wisconsin P&L	*Wis Power & Light Co v Union Pac. R R.*, 5 S.T.B. 955 (2001)
Xcel I	*Pub. Serv Co of Colo d/b/a Xcel Energy v Burlington N & Santa Fe Ry.*, 7 S.T.B. 589 (2004)
Xcel II	*Pub Serv. Co. of Colo. d/b/a Xcel Energy v Burlington N. & Santa Fe Ry.*, NOR 42057 (STB served Jan. 19, 2005).

I Counsel's Argument

BEFORE THE
SURFACE TRANSPORTATION BOARD

INTERMOUNTAIN POWER AGENCY Complainant, v. UNION PACIFIC RAILROAD COMPANY Defendant.	)	Docket No. 42136

PART I

COUNSEL'S ARGUMENT AND SUMMARY OF EVIDENCE

A. INTRODUCTION

By Complaint filed May 30, 2012, Complainant Intermountain Power Agency ("IPA") challenges the reasonableness of the common carrier rates established by Defendant, Union Pacific Railroad Company ("UP"), for the transportation of coal in unit train service from a point of interchange with the Utah Railway Company ("URC") (Provo, Utah) to IPA's electric generating facility, the Intermountain Generating Station ("IGS"), at Lynndyl, Utah. URC provides upstream service on the interline movements with UP pursuant to a long-term rail transportation contract with IPA.

UP established the challenged rates in Item 6200-A of UP Tariff 4222. *See* Exhibit I-1. Effective as of January 1, 2011, UP's common carrier rates for coal transportation from the issue origins/interchange to IGS in IPA-supplied railcars (not including UP's applicable fuel surcharges) are as follows:

TABLE I-1		
Origin/Interchange	286k Capacity Cars	263k Capacity Cars
Provo, Utah	$7.13/ton	$7.27/ton

IPA presents its evidence concerning quantitative market dominance, variable costs, the jurisdictional threshold rate level, and qualitative market dominance in Part II following this Argument and Summary, as well as in the accompanying exhibits and workpapers. IPA presents its evidence on stand-alone costs ("SAC") in Part III. IPA presents the statements of qualifications and verifications by the witnesses who sponsor IPA's evidence in Part IV.

IPA seeks the following relief:

(1) a determination that UP possesses market dominance over the transportation of coal to IPA within the meaning of 49 U.S.C. § 10707;

(2) a determination that the challenged rates exceed a maximum reasonable level and are therefore unlawful under 49 U.S.C. § 10701(d)(1);

(3) a prescription of lawful maximum rates for coal shipments to IGS pursuant to 49 U.S.C. §§ 10704(a)(1) and 11701(a); and

(4) an award of reparations payable by UP to IPA for overcharges collected by UP for common carrier coal transportation to IGS since November 2, 2012, in excess of the rates prescribed by the Board, together with interest.

IPA's Opening Evidence is submitted in a manner consistent with *General Procedures for Presenting Evidence in Stand-Alone Cost Rate Cases*, EP 347 (Sub-No. 3) (STB served Mar. 12, 2001), and *Major Issues in Rail Rate Cases*, EP 657 (Sub-No. 1) (STB served Oct 30, 2006), *aff'd sub nom. BNSF Ry. v. STB*, 526 F.3d 770 (D.C. Cir. 2008) ("*Major Issues*").

IPA originally challenged UP's issue rates (and certain other UP rates) through a Complaint that IPA filed with the Board on December 22, 2010. *See Intermountain Power Agency v. Union Pac. R.R.*, NOR 42127 ("Docket No. 42127") On May 2, 2012, IPA filed a Motion for Leave to Withdraw Complaint and Request for Dismissal of Proceeding. By decision served November 2, 2012, the Board dismissed IPA's prior Complaint without prejudice except as to any movements under the challenged rates that occurred prior to the effective date of the Board's decision (*i e* , November 2, 2012). The Board dismissed the prior proceeding with prejudice as to those movements. IPA has included copies of these and other relevant materials from Docket No. 42127 in its electronic workpapers for this Opening Evidence.

On August 14, 2012, UP filed a Motion to hold the instant proceeding in abeyance pending the completion of the Board's Ex Parte No. 715, *Rate Regulation Reforms* proceeding. *See Rate Regulation Reforms*, EP 715 (STB served July 25, 2012) ("*Rate Regulation Reforms*" or "Ex Parte No. 715"). IPA filed a Reply in opposition to UP's Motion on September 4, 2012. On Friday, December 14, 2012, the Board denied UP's Motion, finding that the case should move forward. *See Intermountain Power Agency v. Union Pac. R.R.*, NOR 42136, slip op. at 3-4 (STB served Dec. 14, 2012) ("*IPA 2012*"). The Board identified four factors in support of its conclusion:

> (1) "[T]he changes proposed in *Rate Regulation Reforms* are not fundamental departures from long established and consistent practice."
>
> (2) "[W]e may proceed with an adjudication while considering a broader rule change."
>
> (3) "[W]e can address any aspects of the rate dispute resolution process that become issues in this proceeding, even though they may also be at issue in Docket No. EP 715. The parties should have been, and continue to be, on notice that use and application of cross-over traffic, as well as ATC revenue allocation methodologies, are potential issues in individual rate cases, and that parties are entitled to raise and respond to substantive arguments regarding those methodologies within those proceedings."
>
> (4) "[W]e are directed by statute to ensure expeditious handling of challenges to the reasonableness of railroad rates and to avoid delay in the discovery and evidentiary phases of these proceedings. 49 U.S.C. § 10704(d)."

Id.

IPA agrees that it was appropriate for the Board to deny UP's Motion, but IPA notes its reservation of rights in light of certain aspects of the Board's reasoning. In particular, the Board states that "[t]he parties should have been, and continue to be, on notice that use and application of cross-over traffic, as well as ATC revenue allocation methodologies, are potential issues in individual rate cases, and that parties are entitled to raise and respond to substantive arguments regarding those methodologies within those proceedings." *Id.*, slip op. at 4 (citing *Ariz. Elec. Power Coop., Inc v BNSF Ry and Union Pac. R.R.*, NOR 42113 (STB served June 27, 2011) ("stating that the Board has concerns with the way cross-over traffic has been costed, and directing the parties to submit new evidence and arguments for how to rectify the identified issue.")).

It is certainly correct that the Board has modified its divisions methodology on a number of occasions during the past decade, and it is likewise correct that the Board's June 2011 decision in *AEPCO* provided notice that the Board has concerns with the "way cross-over traffic has been *costed*." *Id.* (emphasis added). Nevertheless, nothing in prior Board jurisprudence gave any hint that the Board might impose the proposed limitations on the "use" of cross-over traffic described in *Rate Regulation Reforms*. To the contrary, those proposed limitations were entirely novel and outside the scope of any reasonably foreseeable change in the manner in which the Board would approach SAC cases. As of the May 30, 2012 date on which it filed its Complaint, IPA had absolutely no reason to believe that the Board would propose such a change.[1]

[1] As described in greater detail below, the Board's unanimous statement in *Rate Regulation Reforms* that it was not proposing to apply any new cross-over traffic limitations to pending cases (*id.*, slip op. at 17 n.11) further confirms the reasonableness of IPA's reliance on the Board's historic approach to allowing the use of cross-over traffic in evaluating the merits of a possible case and in developing its evidence in this case.

B. BACKGROUND FACTS

IPA is a political subdivision of the State of Utah and is the owner of the Intermountain Power Project ("IPP") IPP's generating station, the Intermountain Generating Station ("IGS"), is located in the Great Basin of western Utah near Lynndyl, Millard County, Utah IGS generates more than 13 million megawatt hours of energy each year from its two coal-fired units and serves approximately 2 million customers. The two IGS generating units have a total capacity of 1,800 MW and consume a total of approximately 5 to 6 million tons of coal per year.

IGS's output is committed, through long-term power sale contracts, to 36 utility entities located in Utah and California (which in turn serve customers in Utah, California, Colorado, Wyoming, Arizona, Nevada, and Idaho). In particular, IGS's generation rights are held, respectively, by the Los Angeles Department of Water and Power ("LADWP") (44.6%), five California cities (30%), twenty-three municipal Utah purchasers (14%), six cooperative Utah purchasers (7%), and one investor-owned Utah purchaser (4%). In addition to being the largest consumer of the electricity generated at IGS, LADWP also acts as the fuels purchasing and operating agent for IPP. Actual operation of IGS is carried out by the Intermountain Power Service Corporation.

The coal-fired units at IGS operate on a "baseload" basis, meaning that the units generally operate at or near their full available capacity on a continuous basis, subject to periodic planned and forced outages for maintenance or repair Rail service to IGS is provided exclusively by UP.

C. UNION PACIFIC HAS MARKET DOMINANCE OVER THE ISSUE TRAFFIC

Market dominance is defined in the statute as "an absence of effective competition from other rail carriers or modes of transportation for the transportation to which a rate applies." 49 U.S.C. § 10707(a). However, even in the absence of effective competition, a carrier will not be found to have market dominance if the "rail carrier proves that the rate charged results in a revenue-variable cost percentage for such transportation that is less than 180 percent." 49 U.S.C. § 10707(d)(1)(A). Accordingly, there are two parts to the market dominance inquiry; quantitative market dominance and qualitative market dominance.

1. QUANTITATIVE MARKET DOMINANCE

a. Traffic and Operating Characteristics

IPA's evidence in Part II-A, sponsored by Thomas D. Crowley and Timothy D. Crowley of L. E. Peabody & Associates, Inc., calculates the variable costs for each of the rates challenged in this proceeding. In accordance with the Board's decision in *Major Issues*, the variable costs were calculated on the basis of unadjusted system average costs using the nine (9) operating characteristic inputs prescribed by the Board, namely: (1) the railroad, (2) loaded miles (including loop track miles), (3) shipment type, (4) number of freight cars per train, (5) number of tons per car, (6) commodity, (7) type of movement, (8) car ownership and (9) type of car. *Id.*, slip op. at 60; *Kansas City Power & Light Co. v. Union Pac. R.R.*, NOR 42095, slip op. at 5-6 (STB served May 19, 2008) ("*KCP&L*").

The parties were able to reach agreement on, and stipulate to, all nine (9) of the designated inputs for coal movements from each of the three origins at issue in this case. *See* Joint Submission of Operating Characteristics, *Intermountain Power Agency v. Union Pac. R.R.*, NOR 42136 (filed October 16, 2012). These stipulated inputs were used to calculate the variable costs. The traffic and operating parameters used by IPA to calculate variable costs for the subject traffic are as follows:

TABLE I-2

Summary of Traffic & Operating Parameters

Movement Parameters	Provo, UT to Lynndyl, UT			
	286,000 GWR	286,000 GWR	263,000 GWR	263,000 GWR
(1)	(2)	(3)	(4)	(5)
1 Railroad	UP	UP	UP	UP
2. Miles	97 0	97.0	97 0	97 0
3. Shipment Type	Received & Terminated	Received & Terminated	Received & Terminated	Received & Terminated
4. Cars per Train	104	104	104	104
5. Car Type	General Service Hopper	Special Service Hopper	General Service Hopper	Special Service Hopper
6 Car Ownership	Private	Private	Private	Private
7 Tons per Car	116 0	116 0	104.1	104 1
8. Commodity	Coal	Coal	Coal	Coal
9 Movement Type	Unit Train	Unit Train	Unit Train	Unit Train

b. Variable Costs

Table I-3 shows the calculation of variable costs sponsored by witnesses Crowley and Crowley for movements from Provo to IGS based upon STB UP URCS unit costs, and indexed to fourth quarter 2012 (4Q12) wage and price levels, using the Board's established procedure for updating variable costs. The associated revenue to variable cost ratios for each of the challenged rates are set forth in Table I-3 as well (each column is similar to the corresponding column in Table I-2):

TABLE I-3
Variable Cost and Revenue/Variable Cost Ratios

	Provo, UT to Lyndyl, UT			
Item (1)	286,000 GWR (2)	286,000 GWR (3)	263,000 GWR (4)	263,000 GWR (5)
1 Phase III Cost Base Year 2011 1/	$1 81	$1.78	$1 94	$1 91
4Q12				
2 Index to 4Q12	1.03248	1.03248	1 03248	1 03248
3 Phase III Cost 4Q12 2/	$1 87	$1 84	$2 01	$1 97
4 Jurisdictional Threshold 3/	$3 37	$3 31	$3 62	$3 55
5 Rate Per Ton in Private Cars 4Q12	$7 46 4/	$7 46 4/	$7.64 5/	$7.64 5/
6 Rate to Variable Cost Ratio 4Q12 6/	3 99	4 06	3 80	3 88

1/ STB 2011 UP URCS formula
2/ Line 1 x Line 2
3/ Line 3 x 1.80
4/ Rate of $7.13 per ton from UP Tariff 4222 plus an average 4Q12 fuel surcharge ("FSC") of $0 33 per ton
FSC based on UP Circular 6602-C (Colorado and Utah), Item 690. UP 4Q12 Average FSC of $0 40 per car-mile based on Oct, Nov, and Dec 2012 fuel surcharges of $0 38, $0 41, $0 40 per car-mile, respectively FSC = $0 40 per car-mile x 97 miles + 116 0 tons per car
5/ Rate of $7 27 per ton from UP Tariff 4222 plus an average 4Q12 FSC of $0 37 per ton
FSC based on UP Circular 6602-C (Colorado and Utah), Item 690 UP 4Q12 Average FSC of $0 40 per car-mile based on Oct, Nov, and Dec 2012 fuel surcharges of $0 38, $0 41, $0 40 per car-mile, respectively FSC = $0.40 per car-mile x 97 miles + 104 1 tons per car
6/ Line 5 + Line 3

As these figures confirm, each of the challenged rates is well in excess of the 180% of variable cost market dominance standard.

2. QUALITATIVE MARKET DOMINANCE

In its analysis of qualitative market dominance, the Board must determine whether UP's rates are constrained by effective competition. Effective competition places "pressures on [a] firm [providing a good or service] to perform up to standards and at reasonable prices, or lose desirable business" *Mkt. Dominance Determinations & Consideration of Prod. Competition*, 365 I.C.C. 118, 129 (1981), *aff'd sub nom. W. Coal Traffic League v. United States*, 719 F.2d 772 (5th Cir. 1983) (*en banc*)

In analyzing the competitive alternatives available to a shipper and the reasonableness of using those alternatives, the Board examines the existence of both intramodal and intermodal alternatives. *Ariz. Pub. Serv. Co. & PacifiCorp v. The Atchison, Topeka & Santa Fe Ry.*, 2 S T.B. 367, 373 (1997) ("*APS*"). The law is clear that the focus of the analysis is to be on "what is feasible or practical," rather than on speculation of what is "theoretically possible" *Westinghouse Elec. Corp v. Alton & S. Ry.*, NOR 38188S, slip op. at 4 (ICC served Feb. 9, 1988)

Here, UP has already repeatedly admitted that the market dominance standards are satisfied both with respect to intramodal and intermodal competition. In particular, in its responses to Complainant's First Requests for Admissions in Docket No. 42127, UP admitted that it "could not prevail on the issue of whether there is qualitative evidence of effective competition from other carriers or modes of transportation" for the subject movements. *See* Part II-B at page II-6 (quoting UP Responses to Request for Admission Nos. 2 and 3) (UP's responses are included with this Opening Evidence as e-workpaper "UP 42127 Responses.pdf"). In addition, UP responded to IPA's Interrogatory Nos. 2 and 3 with the "unqualified admission" that UP faces no effective intramodal or intermodal competition for the subject transportation. *Id.* at pages II-B-7-8 (*see* e-workpaper "UP 42127 Responses pdf.").

In its Reply Evidence in Docket No. 42127, UP acknowledged its admission that it could not prevail in establishing qualitative market dominance and confirmed that it does not dispute that it has market dominance over the transportation to which the challenged rates apply. *See* UP Docket No. 42127 Reply Evidence, at II-1 (included as e-workpaper "UP 42127 Reply Part II.pdf"). The rates challenged here are a subset of the rates challenged in Docket No. 42127.[2]

D. UP'S COMMON CARRIER RATES ARE UNREASONABLE BECAUSE SARR REVENUES EXCEED SARR COSTS

In *Coal Rate Guidelines, Nationwide*, 1 I.C.C 2d 520 (1985), *aff'd sub nom Consolidated Rail Corp. v. United States*, 812 F.2d 1444 (3d Cir. 1987) ("*Coal Rate Guidelines*"), the Board's statutory predecessor adopted constrained market pricing ("CMP") as its methodology for determining maximum reasonable rate levels for market dominant traffic, such as the IPA coal movements that are in issue in IPA's rate case. In accordance with standard practice, IPA is proceeding under the SAC prong of CMP. The Board recently explained CMP as follows:

> The objectives of CMP can be simply stated. A captive shipper should not be required to pay more than is necessary for the carrier involved to earn

[2] IPA also presents in Part II-B a brief description of facts demonstrating that UP faces no effective competition for the issue traffic.

> adequate revenues.[[3]] Nor should it pay more than is necessary for efficient service And a captive shipper should not bear the cost of any facilities or services from which it derives no benefit.

Arizona Elec Pwr Coop., Inc v BNSF Ry and Union Pac. R.R., NOR 42113, slip op. at 3-4 (STB served Nov. 22, 2011) ("*AEPCO 2011*") (citing *Coal Rate Guidelines*, 1 I.C.C.2d at 523-24).

More specifically, SAC develops the principle that a captive shipper's rates should not exceed the level that would be charged by a least-cost, optimally efficient transporter participating in a "contestable" market, unaffected by barriers to entry or exit. As the Board has explained:

> A SAC analysis seeks to determine the lowest cost at which a hypothetical, optimally efficient carrier could provide the service at issue free from any costs associated with inefficiencies or cross-subsidization. . . To begin the analysis, the complainant hypothesizes a stand-alone railroad (SARR) that could serve a selected traffic group if the rail industry were free of barriers to entry or exit.

Tex Mun Power Agency v. Burlington N & Santa Fe Ry., 6 S.T.B. 573, 586 (2003) ("*TMPA*"); *accord AEPCO 2011*, slip op. at 4 Under SAC, the complainant identifies a traffic group, not limited to the issue traffic, to be served by the SARR and designs the transportation system that will service that group efficiently and at the lowest cost, taking account of all essential facilities and

[3] Notably, the Board found UP to be revenue adequate in each of its two most recent annual *Revenue Adequacy* determinations. *See Railroad Revenue Adequacy – 2011 Determination*, EP 552 (Sub-No. 16), slip op. at 1 (STB served Oct. 16, 2012) and *Railroad Revenue Adequacy – 2010 Determination*, EP 552 (Sub-No. 15), slip op. at 1 (STB served Nov. 3, 2011).

operating assets. *See, e.g., W. Fuels Ass'n, Inc. & Basin Elec. Power Coop. v. BNSF Ry.*, NOR 42088, slip op. at 8 (STB served Sept. 10, 2007) ("*WFA I*"); *FMC Wyo. Corp & FMC Corp. v. Union Pac. R R* , 4 S.T.B. 699, 721 (2000) ("*FMC*"); *Coal Rate Guidelines*, 1 I.C.C.2d at 542-44.

IPA has calculated the SAC for the movement of coal from the subject origins/interchange to IGS using the Intermountain Railroad ("IRR") as its SARR. The results of IPA's analysis are presented in Part III-H, which shows that the rates at issue exceed those that would be charged by a least-cost, optimally efficient alternative transporter by a substantial margin.

The five basic steps in a SAC analysis are: (1) identify the traffic group to be served by the SARR and the associated revenues; (2) design the configuration, infrastructure and operating plan for the SARR; (3) determine the construction and operating costs for the SARR system; (4) select the appropriate economic forecasting and depreciation methodologies for use in the discounted cash flow ("DCF") model; and (5) compile the DCF analysis. The development is interactive, rather than strictly sequential, as the results of a subsequent step may prompt a need to revise an earlier step. Each of these is explained in detail in Part III.

1. **<u>Stand-Alone Traffic Group</u>**

IPA has determined the IRR's traffic group in a manner consistent with the *Coal Rate Guidelines*. *See WFA I*, slip op. at 10-11; *TMPA*, 6 S.T.B. at 589. In particular, the IRR does not attempt to handle all of UP's traffic on its lines, but instead focuses principally on unit train and through trainload movements.

In order to identify the IRR's traffic, IPA utilized a combination of different data sources, most of which were provided by UP in discovery, including, *inter alia*, UP's historic revenue, car movement, train event, and routing and density records, and UP's internal traffic projections. IPA selected individual UP shipments (by origin and final destination points) that would move over the IRR for the one-year period beginning July 1, 2011 and ending June 30, 2012 ("Base Year").

The issue traffic in this case consists of interline-received coal traffic moving to IGS. The issue traffic originates at Utah coal origins served by the URC and is interchanged to the IRR at Provo, Utah The URC provides its portion of these through movements pursuant to a long-term contract. In addition to the issue coal traffic, the IRR transports other coal traffic (both to IPA and to third-party shippers) from Utah, Colorado, and Powder River Basin ("PRB") coal sources, and it transports a substantial volume of non-coal traffic.

With the exception of a relatively small volume of general freight traffic that the IRR originates or terminates on its system (and interlines with UP), the IRR's non-coal traffic consists entirely of overhead movements. Trains moving overhead on the IRR system are transported intact, with no classification or switching activities performed by the IRR at the interchange points except for the occasional switching of bad-order/repaired cars and the occasional pick-up or delivery of cars at intermediate points served by the IRR.[4]

a. **Cross-Over Traffic**

IPA has developed its SARR in reliance on the Board's long-standing policy of allowing shippers to include cross-over traffic in their SARR systems. In that regard, while the Board recently proposed in Ex Parte No. 715 to consider certain limitations on the use of cross-over traffic in stand-alone cost cases, the Board emphasized that it was not proposing to impose those limitations in pending cases:

> We do not propose to apply any new limitation retroactively to existing rate prescriptions that were premised on the use of cross-over traffic *or to any pending rate dispute that was filed with the agency before this decision was served.* We do not believe it would be fair to those complainants, *who relied on our prior precedent in litigating those cases.*

Rate Regulation Reforms, slip op at 17 n.11 (emphasis added).

IPA filed its Complaint in the instant case on May 30, 2012, well in advance of the July 25, 2012 date of the Board's Ex Parte No. 715 decision.[5] Even more importantly, IPA has "relied on [the STB's] prior precedent" throughout its multi-year process of challenging UP's rates IPA relied on the

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[4] The IRR does not reroute any traffic or utilize any trackage rights.

[5] In fact, by the July 25, 2012 date of the Board's Ex Parte No. 715 decision: (i) the Board already had approved both the procedural schedule and protective order in this case; (ii) IPA and UP each had served discovery requests; and (iii) the parties each had served written responses and objections to those discovery requests.

Board's long-standing approval of cross-over traffic when it decided to file its Complaint in Docket No. 42127, when it requested leave to modify its SARR system in Docket No. 42127, when it decided to seek leave to dismiss that case, and when it filed the Complaint initiating the instant case. IPA likewise has developed its present SARR system in reliance upon the Board's statement that it did not propose to apply its proposed Ex Parte No. 715 limitations to this case As the Board itself recognized in Ex Parte No. 715, it would not be fair to impose new cross-over traffic limitations in this case. *Id.*, slip op. at 17 n.11.

Notably, the Board recently re-emphasized this determination both in *E I. DuPont de Nemours and Co. v Norfolk S. Ry.*, STB Docket No. NOR 42125 (served Nov. 29, 2012) ("*DuPont*"), holding that "[w]e have already clearly stated that '[w]e do not propose to apply any new limitation [that may be adopted in EP 715] retroactively to . . . any pending rate dispute that was filed with the agency before the decision was served.'" *Id.*, slip op. at 4-5 (citing Ex Parte No. 715, slip op. at 17 n.11); and in its December 14, 2012 decision in this case. *Accord IPA 2012*, slip op. at 3. The Board also explained in both decisions that it was "maintaining the underlying precept[] that cross-over traffic is an acceptable and useful simplifying tool in building a SARR . . . ." *DuPont*, slip op. at 4; *see also IPA 2012*, slip op. at 3.

In its August 14, 2012 Motion to Hold Proceeding in Abeyance, UP stated that it will seek to persuade the Board to impose restrictions on IPA's use of cross-over traffic in this case. *See, e.g*, UP Motion to Hold Proceeding in

Abeyance at 5. IPA is participating in Ex Parte No. 715 as a member of the Concerned Captive Coal Shippers. This group filed joint Opening and Reply Submissions in Ex Parte No. 715. IPA will not repeat all of its Ex Parte No. 715 arguments here, but instead, incorporates those arguments by reference. IPA has included copies of its Submissions in its electronic workpapers. *See* e-workpapers "Coal Shippers EP 715 Opening.pdf" and "Coal Shippers EP 715 Reply.pdf."

As IPA explained in its Reply to UP's Motion to Hold Proceeding in Abeyance, imposition of the Board's cross-over traffic limitations would impose a substantial hardship upon IPA, which is particularly inappropriate in light of IPA's repeated reliance on the Board's long-standing approach to cross-over traffic. *See* IPA September 4, 2012 Reply at 3-5, 7, 16-18. IPA would be required to engage in a complete re-examination of its case based upon a far broader set of UP traffic and cost records than is currently available to IPA This analysis would be extremely expensive and onerous Moreover, given the substantial uncertainty associated with constructing a vastly larger stand-alone system, the end result of such an analysis could well be an inability to demonstrate that the challenged rates are excessive (*e.g.*, some impediment to cost-effective SARR construction or operation of such a large system could exist well beyond the scope of the current IRR system). In that regard, the Board's proposal would make it far more difficult for shippers (or carriers) to predict the end result of a SAC analysis prior to the start of rate litigation.

b. **Cross-Over Divisions/ATC Methodology**

In its Decision served July 25, 2012 in Ex Parte No. 715, the Board proposed to utilize an "Alternative" form of ATC, but the Board stated therein that the modification would be used in *future* cases:

> We therefore seek public comment on whether we should adopt this modification to ATC for use in all future SAC and Simplified-SAC proceedings and whether it provides a more suitable methodology that would better accommodate the two competing principles than the current ATC approach

Id., slip op. at 18.[6] In this proceeding, therefore, IPA employs the Board's Modified ATC methodology to determine the cross-over revenues assignable to the IRR.

As noted above, IPA filed evidence in Ex Parte No. 715 opposing the Board's proposed modifications to its Full-SAC methodology, including proposed changes to the Board's ATC divisions approach IPA incorporates those arguments by reference here as well. *See* e-workpapers "Coal Shippers EP 715 Opening.pdf" and "Coal Shippers EP 715 Reply.pdf." For the reasons set forth therein, IPA respectfully submits that the Board should not impose Alternative ATC in this case, but instead, should calculate cross-over divisions on the basis of Modified ATC. Nevertheless, in order to demonstrate that the impact of the issue

[6] Nothing in the Board's *DuPont* decision (or in *IPA 2012*) contradicts the Board's prior declaration that it was proposing to apply Alternative ATC in "future" cases.

in this case is extremely modest, IPA has included alternative calculations using the Alternative ATC approach.

IPA describes its procedures for forecasting traffic volumes and revenues in detail in Part III-A.

2. The IRR Configuration and Operating Plan

The IRR's system configuration and operating plan are described in Parts III-B and III-C. They were developed primarily by IPA Witness Paul Reistrup, a nationally-recognized expert on rail operations. In fact, as a consultant in the early 1980's, Mr. Reistrup planned the track configurations for the IGS coal unloading facilities and at IPA's railcar maintenance facility located near Springville, UT. His designs are in use today and contribute to the successful operation of these facilities.

IRR System Configuration. The IRR system is shown schematically in Exhibit III-A-1. Consisting of 174.96 constructed route miles, the IRR system provides the rail facilities needed to transport coal between the issue interchange at Provo and IGS These facilities are located entirely within the state of Utah and replicate existing UP rail lines between Provo on the northeast and Milford on the southwest, and include portions of UP's Sharp and Lynndyl Subdivisions In addition to IPA's coal traffic, the IRR also uses these lines to transport other coal and non-coal traffic that UP transports over the same lines in the real world The IRR's Lynndyl Subdivision connects with the private spur that serves IGS (known as the IPP Industrial Lead) 1.55 miles west of Lynndyl, and extends beyond to

Milford, which is the first UP crew-change point west of that connection and a logical place to interchange interline traffic that the IRR transports over a portion of UP's Lynndyl Subdivision.

In Docket No. 42127, UP incorrectly claimed that the Lynndyl-to-Milford portion of the IRR "does not carry any issue traffic." *See* e-workpaper "UP 42127 Part I.pdf" at I-2. In this same regard, the schematic that UP presented in its Argument wrongly depicted the IPP Industrial Lead meeting UP's mainline track at Lynndyl, rather than 1.55 miles west of Lynndyl. *Id.* at I-3.[7] Contrary to UP's claims, the issue traffic (both in Docket No. 42127 and in the present case) does move over a portion of UP's line between Lynndyl and Milford. In any event, the inclusion of traffic moving over the Lynndyl-to-Milford segment is entirely consistent with established Board precedent. *See, e g., W. Fuels Ass'n, Inc. and Basin Elec. Power Coop, Inc. v. BNSF Ry.*, NOR 42088, slip op. at 10 (STB served Feb. 18, 2009) ("*WFA II*"); *Otter Tail Power Co v BNSF Ry.*, NOR 42071, slip op. at 9-10 (STB served Jan. 27, 2006) ("*Otter Tail*").

As described in detail in Part III-B, the IRR's facilities have been designed and sized to accommodate its traffic group, which is smaller than that of most SARRs in prior coal rate cases, in particular those carrying PRB coal traffic. The main line consists of single track with passing sidings, as well as set-out

[7] *See also id.* at I-11 (UP again wrongly claiming that "IRR does not need the Milford-Lynndyl segment to serve the issue traffic" and that the IRR's intermodal traffic moving via Milford-Lynndyl "does not share any facilities with the issue traffic.").

tracks located near each of the IRR's Failed Equipment Detectors. The portion of the main line between Lynndyl and Milford, where traffic volume is heaviest, is equipped with Centralized Traffic Control ("CTC"). The remainder of the main line, between Provo and Lynndyl, does not require CTC given its considerably lower traffic volume. However, the non-CTC portion of the main line has power switches remotely controlled by the locomotive engineers, a technology currently in existence on Class I railroads including main lines operated by the Kansas City Southern Railway. The maximum permissible train speed is 70 miles per hour for intermodal trains operating on the Lynndyl Subdivision between Lynndyl and Milford, 60 miles per hour for all other trains operating on the Lynndyl Subdivision, and 49 mph in the non-CTC or "dark" territory on the Sharp Subdivision between Provo and Lynndyl.

As described in Part III-B-2, the IRR interchanges coal traffic with the residual UP at three locations (Provo, Lynndyl, and Milford) and with the URC at Provo. The IRR has small interchange yards at Lynndyl and Milford, as shown in Exhibits III-B-1 and III-B-2. There is no need for an inspection or other yard at Provo, as the IRR does not perform any 1,000 or 1,500 mile inspections, and trains are physically interchanged with other carriers (UP or URC) in the Provo area on the Coal Wye tracks (a/k/a the Ironton Crossover tracks, shown on the first page of Exhibit III-B-1), in UP's Provo Yard, or at IPA's Springville railcar maintenance facility.

The IRR's locomotives are inspected, serviced and repaired at the IRR's locomotive facility at N. Springville (located just south of Provo and near IPA's Springville railcar repair facility, where 1,500-mile inspections of certain eastbound empty IRR coal trains are performed by IPA personnel as contractors to the IRR). Locomotives are fueled at the N. Springville locomotive facility using direct-to-locomotive ("DTL") fueling by tanker truck; thus the IRR requires no fixed fueling platforms or other permanent fueling facilities.

IRR Operating Plan. The IRR's operating plan is described in detail in Part III-C. It is designed to enable the IRR to handle its peak year traffic volumes (and the trains moving over its system during the peak week in that year) efficiently and in accordance with all relevant customer service requirements. All coal and grain traffic moves in unit trains, and with the exception of cars originated or terminated on the IRR, the non-coal trains move intact in overhead service between on-SARR and off-SARR junctions with the residual UP.

The IRR's operating plan accommodates the movement of some non-coal cars in interline-forwarded or interline-received service to or from five local points on the IRR (Nephi, Sharp, Martmar, Delta, and Bloom). These cars move either on through trains operating between Milford and Lynndyl or Provo (which stop en route to make local pick-ups or set-outs), or, in the case of grain traffic destined to the Moroni Feed Company's grain loop at Sharp, in unit trains that move from the UP interchange at Provo to the Sharp grain loop and return.

The operation of these trains is modeled in IPA's simulation of the IRR's peak-period operations using the RTC Model (described further below).

The operating plan calls for the IRR to acquire a single type of modern, AC-powered locomotive model, the General Electric ES44-AC, which is suitable for handling the IRR's traffic and which is extensively used by UP to transport coal and other traffic. The IRR's maximum train speeds generally are consistent with those on the real-world lines being replicated, and its signals and communications system (including the use of CTC where warranted) are consistent with its traffic volumes and operational requirements The IRR has also been provided with appropriate yard/interchange facilities, and with operational staffing consistent with its needs, including crew districts specifically sized for its repetitive train operations in a few well-defined corridors Finally, the IRR's operating plan takes account of the fact that its traffic group does not include any rerouted movements (internal or external).

A SARR's operating plan must enable the railroad to meet the transportation (service) requirements of the shippers whose traffic it carries *AEPCO 2011*, slip op. at 28. To verify the ability of the IRR system and operating plan to accommodate its traffic group efficiently, IPA's experts conducted a simulation of the IRR's operations during the peak traffic week of its peak traffic year in the DCF period (*i.e.*, November 2, 2021 through November 1, 2022), using the Board-approved Rail Traffic Controller ("RTC") Model. The modeling exercise and the operating and other inputs used in the Model are described in detail in Part III-C-2. The average transit times for IRR trains produced by the RTC Model simulation are compared with UP's average real-world transit times for the corresponding trains during the peak week of the Base Year, in Exhibit III-C-4 and accompanying electronic workpapers. The results are that the IRR's transit times for the various categories of traffic moving in all corridors are equal to or lower than UP's real world transit times, thus demonstrating the ability of its system and operating plan to meet its customers' service requirements.

3. IRR Operating Expenses

The operating costs for the IRR are described in detail in Part III-D. A summary of these annual operating expenses is set forth in Table III-D-1 on page III-D-3, *infra*. The operating expenses reflect the IRR's relatively small size and location, locomotive, railcar and other equipment needs, operating plan, personnel requirements (both operating and non-operating including general and administrative personnel), maintenance-of-way plan, and costs for loss and damage, ad valorem taxes, insurance, and startup and training. The IRR's first-year operating expenses equal $45.58 million.

In general, the IRR's personnel and equipment needs reflect its facilities and operations in its peak traffic year during the 10-year DCF period (December 2, 2012 through December 1, 2022). These needs were determined by IPA's expert rail operations, engineering, information technology and MOW witnesses, and reflect the concept of an efficient, non-unionized SARR that is a Class II railroad. They also take into account the IRR's limited geographic scope and the relatively small peak year traffic volumes moving over the various parts of the IRR system. IPA Witness Philip H. Burns developed unit costs for application to the IRR's annual service units using actual cost data produced by UP in discovery where possible, and actual costs incurred by other railroads (where known) for comparable functions and services, along with information provided by IPA's operating, engineering and information technology experts.

IPA's development of the IRR's operating expenses is consistent with recent Board decisions in SAC rate cases, including in particular its most recent decisions in the *WFA* and *AEPCO 2011* cases. As described in Part III-G, the IRR's operating costs were adjusted forward over the 10-year DCF period based on Global Insight's forecasts of expected changes in the RCAF-A and the RCAF-U, which were combined using the phase-in approach approved by the Board in *Major Issues*, slip op. at 42-47.

4. <u>Road Property Investment Cost</u>

Part III-F describes and documents in detail how the IRR is designed and constructed in accordance with governing standards of the American Railway Engineering and Maintenance-of-Way Association for track, roadbed, bridge, culvert and other requirements. and consistent with determinations made by the Board in recent cases addressing construction parameters and costs for stand-alone rail systems. *See, e.g.*, *WFA I*, slip op. at 77-133. Specific grading and other design characteristics have been derived from UP data regarding existing lines that were produced in discovery, as well as direct observation and evaluation of the geography, terrain, topography and general conditions of the IRR route by IPA's expert rail engineering consultants. Design parameters for elements such as roadbed width, side slope measurements, and other features are based on Board-approved parameters from previous cases. *See, e g.*, *AEP Texas*, slip op. at 79-80; *Public Service Co. of Colorado d/b/a Xcel Energy v. Burlington N & Santa Fe Ry.*, 7 S.T.B. 589, 671-73 (2004) ("*Xcel I*"); *TMPA*, 6 S T.B. at 700-708; *Duke Energy Corp v CSX Transp. Inc.*, 7 S.T.B. 402, 476 (2004) ("*Duke/CSXT*").

The evidence submitted in Part III-F and accompanying exhibits and workpapers documents IPA's calculations of material and construction costs, including design, engineering and contingencies. Total construction costs for the 174.96 constructed route-miles that comprise the IRR system, including associated land acquisition costs, are $386.7 million, or approximately $2.2 million per route-mile. *See* Part III-F at III-F-2 for a summary table.

Also consistent with Board precedent, IPA projects a 30-month time period for design and construction of the IRR. This estimate reasonably employs the principles of unconstrained resources and simultaneous construction, where possible, of different segments of the IRR system that spring from the entry-barrier free principle that is among the core components of CMP. *See, e.g.*, *Carolina Power & Light Co v. Norfolk Southern Ry.*, 7 S.T.B. 235, 244 (2003) ("*Carolina P&L*"); *Coal Trading Corp. v. Baltimore & Ohio R R.*, 6 I.C.C.2d 361, 413 (1990) ("*Coal Trading*"); *West Texas Utilities*, 1 S T.B. at 668-69; *Coal Rate Guidelines*, 1 I C.C.2d at 529.

The same principles apply with respect to such items as utility protection, road detours, environmental regulations compliance, and other such features. Where records or data produced in discovery do not show any expenditures by UP or its predecessors when these facilities first were installed, the related costs have been excluded from construction costs for the IRR as well. *See AEP Texas*, slip op. at 85; *Xcel I*, 7 S.T.B. at 681; *Duke/CSXT*, 7 S.T.B. at 484. However, where there is evidence that UP or one of its predecessors incurred the expense – or the age of the facility or line segment indicates that such an expenditure was likely – IPA includes the appropriate cost in its analysis. *See* Parts III-F-2, III-F-5, and III-F-8

As detailed in Part III-F-1, the IRR requires a total of 2,108 acres of land, including land grants and easements, based upon an average right-of-way width of 100 feet in rural areas and 75 feet in cities and large towns, and the real estate requirements for the IRR yards, buildings, service roads and other auxiliary facilities described in Parts III-C and III-F. Real estate costs are based on appraisals conducted or supervised by IPA's real estate expert, Stuart Smith, using the methodology described in Part III-F-1. Consistent with the principle of barrier-free entry cited *supra*, no assemblage factors are incorporated in the IRR real estate costs as there is no evidence that UP or its predecessor(s) were burdened by assemblage when they acquired the rights-of-way and contiguous land for the line segments replicated by the IRR. *See West Texas Utilities*, 1 S.T.B. at 670-71.

5. Application of the DCF Model

Part III-G outlines the DCF methodology applied by IPA in calculating SAC and the maximum SAC rates that result from the IRR SAC analysis. The DCF methodology is consistent with that adopted in *Coal Rate Guidelines*, as subsequently modified in *Major Issues*, and as most recently applied in *WFA*, *AEP Texas*, and *AEPCO 2011*.[8]

IPA's DCF analysis includes the following elements:

a Debt and equity costs for the IRR over its construction period (May, 2010-October, 2012) are based on the Board's annual cost of capital determinations, consistent with the Board's 2011 finding in the *AEPCO* case. *See AEPCO 2011*, slip op. at 135-37

b The use of inflation indices compiled by the AAR appropriate to various road property components of the IRR (Part III-G-2), and the "hybrid" RCAF-U/RCAF-A approach adopted by the Board in *Major Issues* to index the IRR's operating expenses. *See* Part III-G-2.

[8] As described in Part III-H-1-d, IPA has employed a debt structure for the IRR of the type actually utilized in the railroad industry, rather than using the "home mortgage" approach typically employed in prior stand-alone cases before the Board. Specifically, the IRR will make fixed, interest-only, coupon payments on its debt. As IPA explains, the AAR's filing in the 2011 cost of capital determination shows that nearly 92 percent of railroad industry debt consists of corporate bonds, notes and debentures that incorporate such periodic coupon payments.

c. A determination of federal and state tax liabilities consistent with the Board's approach in prior coal rate cases, taking account of recent federal economic stimulus legislation. *See* Part III-G-3; Part III-H-1-f.

d The use of economic depreciation to determine the value of the IRR's assets at the end of the DCF period. *See* Exhibit III-H-1.

e. The use of a "time-based" capital recovery approach, as applied in *TMPA, Duke Energy Corp. v. Norfolk S. Ry*. 7 S.T B. 123 (2003) ("*Duke/NS*") and *Carolina P&L*. *See* Part III-G-4.

f. The distribution of total excess stand-alone revenues over stand-alone costs in each year of the DCF Model – and thus, the determination of the annual measure of rate relief to which IPA is entitled – using the Maximum Mark-Up Methodology ("MMM") adopted by the Board in *Major Issues* and most recently applied in *AEPCO 2011*, with variable costs forecast in accordance with the Board's recent decision in *Oklahoma Gas & Elec. Co. v. Union Pac. R.R.*, NOR 42111 (STB served July 24, 2009) ("*OG&E*"). *See* Part III-H-2.

E. <u>RATE RELIEF AND DAMAGES</u>

Based upon the evidence presented herein, the Board should find that UP possesses market dominance over the transportation of coal to IPA from the subject interchange in accordance with 49 U.S.C. § 10707. The Board further should find that the rates set forth in Item 6200-A of UP Tariff 4222, and as applied to the subject movements, exceed maximum reasonable levels as determined under the SAC constraint of the *Coal Rate Guidelines*, and therefore are unlawful under 49 U S C § 10701(d).

1. **Prescription of Maximum Rates**

In accordance with the provisions of 49 U.S C. § 10704(a), IPA is entitled to a Board order prescribing the maximum rates that lawfully may be charged by UP to transport coal to IGS. As detailed in Table III-H-3, and as set forth below in Table I-4, the maximum rates that should be prescribed are as follows·

TABLE I-4 (Principal Case)
IPA MMM Rates per Ton – 4Q12
Maximum Reasonable Rates for Coal Movements to IGS

Origin/Interchange	Car Type	Minimum Car Lading	4Q12
Provo, UT	Gen. Svc Hopper	100	$4.38
Provo, UT	Gen. Svc. Hopper	115	$4.08
Provo, UT	Spec. Svc. Hopper	100	$4.29
Provo, UT	Spec Svc. Hopper	115	$4.01

Source: "IGSMMM Rates.xlsx."

TABLE I-4 (Alternative Case)[9] IPA MMM Rates per Ton – 4Q12 Maximum Reasonable Rates for Coal Movements to IGS			
Origin/Interchange	**Car Type**	**Minimum Car Lading**	**4Q12**
Provo, UT	Gen. Svc. Hopper	100	$4.41
Provo, UT	Gen. Svc. Hopper	115	$4.10
Provo, UT	Spec. Svc. Hopper	100	$4.32
Provo, UT	Spec. Svc. Hopper	115	$4.04
Source: "IGSMMM Rates.xlsx."			

2. **Award of Damages**

Since November 2, 2012, IPA has paid UP freight charges for the subject coal transportation service to IGS at tariff rates significantly higher than the lawful maximums summarized in the previous table. Accordingly, pursuant to 49 U.S.C. § 11704(b), upon conclusion of this proceeding the Board should enter an award for damages sustained as a consequence of UP's violation of 49 U.S.C. §

[9] The only difference between IPA's Base Case and its Alternative Case is that IPA utilized "Alternative ATC" to calculate division in its Alternative Case.

10701(d) consisting of a refund of such overpayments plus interest. *See* Part III-H-3.

Respectfully submitted,

INTERMOUNTAIN POWER AGENCY

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CERTIFIFCATE OF SERVICE

I hereby certify that this 17th day of December, 2012, I have caused both Highly Confidential and Public versions of the Opening Evidence of Complainant Intermountain Power Agency to be served by hand delivery upon:

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I further certify that I have caused a Public version of this Opening Evidence to be served by overnight courier upon·

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II Market Dominance

BEFORE THE
SURFACE TRANSPORTATION BOARD

INTERMOUNTAIN POWER AGENCY Complainant, v. UNION PACIFIC RAILROAD COMPANY Defendant.	)	Docket No. 42136

PART II

MARKET DOMINANCE

A. QUANTITATIVE EVIDENCE

The Board considers both quantitative and qualitative market dominance in determining whether there is an absence of effective competition under 49 U.S.C. § 10707.

49 U.S.C. § 10707(d)(1) defines the quantitative element of the market dominance test as a showing that the revenues produced by the rail movements at issue are at least 180% of the respective variable costs of providing the related transportation service for each of those movements. In this Part II.A, IPA demonstrates that the quantitative threshold is met with respect to the rates under challenge in this proceeding.

Under the approach that the Board adopted in *Major Issues*, the UP tariff rates at issue are compared to the variable costs for the corresponding movements, calculated on an unadjusted system average basis using the Board's Uniform Rail Costing System (URCS) Phase III program, and nine (9) specific traffic and operating inputs for each movement: (1) the railroad; (2) loaded miles (including loop track miles); (3) shipment type (originated and terminated or "local," originated and delivered, received and delivered or "bridge," and received and terminated); (4) number of freight cars per train; (5) number of tons per car; (6) commodity; (7) type of movement (single car, multiple car or unit train); (8) car ownership (railroad or private); and (9) type of car. *See Major Issues*, slip op. at 52 n.166; *KCP&L*, slip op. at 5-6. The variable costs and resulting revenue to variable cost (R/VC) ratios presented by IPA in this Part were calculated in accordance with these guidelines.

1. **Traffic and Operating Characteristics**

In accordance with the procedural schedule approved by the Board on July 11, 2012, IPA and UP filed a Joint Submission of Operating Characteristics on October 16, 2012. The parties conferred about, and were able to agree upon, all of the traffic and operating characteristics for the coal movements to which the challenged rates apply. The applicable tariff covers shipments in both 286,000 GWR and 263,000 GWR general service hoppers and special service hoppers, and specifies different rates for each weight category. The traffic and operating parameters used by IPA in its calculation of variable costs for each of the subject movements are as follows:

TABLE II-A-1

Summary of Traffic & Operating Parameters

Movement Parameters	Provo, UT to Lynndyl, UT			
	286,000 GWR	286,000 GWR	263,000 GWR	263,000 GWR
(1)	(2)	(3)	(4)	(5)
1 Railroad	UP	UP	UP	UP
2 Miles	97 0	97 0	97 0	97 0
3. Shipment Type	Received & Terminated	Received & Terminated	Received & Terminated	Received & Terminated
4. Cars per Train	104	104	104	104
5. Car Type	General Service Hopper	Special Service Hopper	General Service Hopper	Special Service Hopper
6 Car Ownership	Private	Private	Private	Private
7. Tons per Car	116 0	116 0	104 1	104 1
8 Commodity	Coal	Coal	Coal	Coal
9. Movement Type	Unit Train	Unit Train	Unit Train	Unit Train

2. Variable Costs

Table II-A-2, below, shows the calculation of variable costs[1] for movements from the origin at issue to IGS based upon the Board's 2011 UP URCS unit costs forecast to Fourth Quarter 2012 (4Q12) wage and price levels using the Board's established procedure for updating variable costs.[2] All variable costs are calculated on a system average basis, with no adjustments other than those set forth in *Review of the General Purpose Costing System*. 2 S.T.B. 659 (1997) and endorsed in *Major Issues*. *See KCP&L*, slip op at 7-8. The Table also

[1] The testimony in this Part II-A is being sponsored by Thomas D. Crowley and Timothy D Crowley of L.E Peabody & Associates, Inc. Their credentials are detailed in Part IV.

[2] The methodology employed is the Interstate Commerce Commission's IE3-80 procedure, supplemented in accordance with *Complaints Filed Under Section 229 of the Staggers Rail Act of 1980*, 365 I.C.C. 507 (1982).

shows the calculated Jurisdictional Thresholds and rate to variable cost ratios for each car type.

TABLE II-A-2

Variable Cost and Revenue/Variable Cost Ratios

	Provo, UT to Lyndyl, UT			
Item	286,000 GWR	286,000 GWR	263,000 GWR	263,000 GWR
(1)	(2)	(3)	(4)	(5)
1 Phase III Cost Base Year 2011 1/	$1.81	$1 78	$1.91	$1 91
4Q12				
2. Index to 4Q12	1 03248	1 03248	1 03248	1 03248
3 Phase III Cost 4Q12 2/	$1 87	$1 84	$2 01	$1 97
4 Jurisdictional Threshold 3/	$3 37	$3 31	$3.62	$3 55
5 Rate Per Ton in Private Cars 4Q12	$7 46 4/	$7 46 4/	$7 64 5/	$7.64 5/
6 Rate to Variable Cost Ratio 4Q12 6/	3 99	4 06	3.80	3 88

1/ STB 2011 UP URCS formula
2/ Line 1 x Line 2
3/ Line 3 x 1.80
4/ Rate of $7 13 per ton from UP Tariff 4222 plus an average 4Q12 fuel surcharge ("FSC") of $0 33 per ton
FSC based on UP Circular 6602-C (Colorado and Utah), Item 690 UP 4Q12 Average FSC of $0 40 per car-mile based on Oct, Nov, and Dec 2012 fuel surcharges of $0 38, $0 41, $0 40 per car-mile, respectively FSC = $0 40 per car-mile x 97 miles + 116 0 tons per car
5/ Rate of $7 27 per ton from UP Tariff 4222 plus an average 4Q12 FSC of $0 37 per ton.
FSC based on UP Circular 6602-C (Colorado and Utah), Item 690 UP 4Q12 Average FSC of $0 40 per car-mile based on Oct, Nov, and Dec 2012 fuel surcharges of $0 38, $0.41, $0 40 per car-mile, respectively FSC = $0 40 per car-mile x 97 miles + 104 1 tons per car
6/ Line 5 + Line 3

Based upon UP's 4Q12 variable costs and the challenged rates (including the fuel adjustment), the revenue to variable cost ratios range from 380% to 406% of variable costs, all far in excess of the Jurisdictional Threshold of 180%.

B. QUALITATIVE MARKET DOMINANCE

The second aspect of the market dominance analysis involves qualitative considerations and includes a review of both intramodal and intermodal competition.[3] IPA's Intermountain Generating Station ("IGS") is located near Lynndyl in Millard County, Utah and includes two generating units with a total capacity of 1,800 MW. IGS is not served by any railroad other than UP, and it is infeasible for IGS to receive the very large volumes of coal covered by the challenged rates by motor carriage. As such, there is no intramodal or intermodal competition and UP enjoys market dominance over the issue movements.

The challenged rates in this proceeding apply to coal shipments to IGS from one origin: a point of interchange with the URC, at Provo, Utah. IPA anticipates that its shipments of coal from this origin over the next ten (10) years will be in the range of 2.5 to 3.5 million tons per year, out of total annual deliveries of { }. The balance of its requirements, approximately { }, is expected to be shipped from non-issue origins. The coal volumes currently under contract by IPA, and its best estimates of coal volumes and coal origins for the next ten (10) years, are set forth in an internal forecast appearing at e-workpaper "IGS Coal Traffic Forecast.xlsx."

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In an effort to maximize efficiency and minimize the expense associated with discovery in this case, the parties agreed to rely, to the extent

[3] The testimony in this Part II-B is being sponsored by John Aguilar and Lance Lee of IPA. Their positions and backgrounds are detailed in Part IV.

possible, on the discovery requests and responses in Docket No. 42127; to request updates of those responses to those earlier discovery requests where appropriate; and to limit new requests The parties accordingly extended the protective order to cover use in this docket of materials from Docket No. 42127

In its responses to IPA's First Requests for Admissions, Interrogatories, and Requests for Production of Documents in Docket No. 42127, UP confirmed the absence of effective competition in this case. Specifically, UP first admitted that:

> it could not prevail on the issue whether there is qualitative evidence of effective competition from other carriers or modes of transportation for the movement of coal from the "Origins," as defined in IPA's Definition No. 13, to the IPA Generating Station under the standards currently being applied by the Board.

UP Responses to Request for Admission Nos. 2 and 3. UP's responses are included with this Opening Evidence as e-workpaper "UP 42127 Responses.pdf."

In addition, UP responded to IPA's Interrogatory Nos. 2 and 3 with the "unqualified admission" that UP faces no effective intramodal or intermodal competition for the subject transportation. *Id.* (e-workpaper "UP 42127 Responses.pdf.")

UP refused to produce any documents in response to IPA's request for the production of any documents regarding intramodal or intermodal competition on the grounds, *inter alia*, that IPA's request "seeks information that is neither relevant nor reasonably calculated to lead to the discovery of admissible evidence." *See* UP Response to IPA Request for Production No. 2 (e-workpaper "UP 42127 Responses.pdf.").

In its Reply Evidence in Docket No. 42127, UP acknowledged its admission that it could not prevail in establishing qualitative market dominance and confirmed that it does not dispute that it has market dominance over the transportation to which the challenged rates apply. *See* UP Docket No. 42127 Reply Evidence, at II-1 (included as e-workpaper "UP 42127 Reply Part II.pdf"). The rates challenged here are a subset of the rates challenged in Docket No. 42127. While UP's admissions and statements in Docket No 42127 are sufficient to resolve the issue of market dominance in this proceeding in IPA's favor, IPA nevertheless will address briefly the factual details of the issue transportation service and the absence of any effective competitive alternative for that service.

1. **<u>Intramodal Competition</u>**

IGS is located on UP's main line between Salt Lake City, Utah and Los Angeles, California and UP is the only rail carrier capable of serving the plant. The second-nearest railroad to IGS is the Utah Railway Company ("URC"), whose tracks are located approximately 90 rail miles from the plant. Given the distance involved, there is no practical option for a rail build-out from IGS.

Because IGS is served only by UP and a rail build-out is infeasible, there is no intramodal competition.

2. Intermodal Competition

There are no intermodal competitive alternatives that effectively constrain the rates charged by UP to perform the service at issue.

IPA operates and maintains approximately 400 railcars, consisting of both aluminum and steel cars. It owns a railcar service facility in Springville, UT, just south of Provo, UT. IPA has undertaken major upgrades to that facility in the past three years, including the construction of a new overpass, as well the installation of additional track facilities to accommodate longer unit trains. At least { } was spent on land and funding for the overpass. In addition, IPA has spent approximately { } on its expansion of the railcar service facility. Very simply, IPA has always relied upon, and continues to be fully committed to, rail transportation for delivery of the vast bulk of its coal requirements. There are very good reasons for that reliance on rail transportation.

Trucking high volumes of coal to IGS is operationally infeasible, prohibitively expensive and politically impractical For the past ten years, IPA has typically trucked less than five percent of its coal to IGS.[4] Most of those truck deliveries have been associated with periodic changes in mining operations at the SUFCO Mine operated by Arch Coal, which is located in Sevier County, UT –

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[4] The most recent full year (2011) data show truck shipments of approximately 700,000 tons The majority of those tons were from the new Coal Hollow Mine, from which IPA began receiving coal in 2011. This mine is not served by any rail carrier, and the mine determined that trucking was the most feasible and economic means of delivering the coal given the location of the nearest potential rail transload point, which would have required circuitous truck movements of approximately 110 miles from the mine.

approximately 115 miles east of IGS. For operational reasons, the amount of SUFCO coal that IPA can efficiently burn at IGS is limited to { }. Over the last five years, IPA has shipped an average of approximately 240,000 tons of coal per year by truck from the SUFCO Mine. The remaining portion of deliveries from SUFCO, averaging around 1.75 million tons per year, have been shipped by rail via UP at the Sharp loadout near Levan, Utah. The SUFCO Mine is an underground mine that operates a longwall as well as continuous mining equipment. Truck transport from SUFCO is not continuous and regular, but is used primarily during periods when SUFCO is moving its longwall IPA encounters community opposition to trucking from SUFCO to IGS during periods when such truck shipments are voluminous on a monthly basis. IPA has requested and UP has provided common carrier rates for rail shipments of SUFCO coal from Sharp. IPA is currently utilizing these rates, but has not challenged them in this proceeding.

The distance from Provo, Utah and the volumes to be shipped from that interchange make trucking an infeasible option. The Provo interchange point with URC is approximately 90 rail miles from IGS. The volume of coal to be shipped from this origin (between 2.5 and 3.5 million tons per year) and the associated costs, make motor carriage over these distances infeasible

IPA has been taking substantial volumes of coal from URC-served origins for many years. URC hauls these tonnages to Provo and IPA's trains are interchanged there to UP for movement to IGS. IPA has never utilized trucks for transporting coal from the URC interchange in Provo to IGS. There are no facilities available in the Provo area that would be capable of transloading coal from rail to truck In addition, such an option would be impractical versus an all-rail movement in that it would require unloading coal from railcars, storing the coal on the ground and re-loading the coal into trucks (even if a suitable transload location could be identified and appropriate transload facilities constructed) and a 90-mile truck haul from Provo to IGS. Given the volumes of coal IPA anticipates shipping via URC from Savage as described above. the number of tandem truckloads required would be approximately { } per day. All of the steps involved in attempting to truck coal from Provo to IGS would unquestionably result in significantly greater costs than a direct or interchanged rail move. Indeed, even before adding a suitable transloading fee, IPA estimates that the trucking costs would exceed the rail transportation costs by { } based on 2012 trucking rates and UP's 115 tons per car tariff rate from Provo If one assumes a transload cost of { } IPA believes is probably lower than could ever be achieved, the incremental cost for truck deliveries would be { }

More generally, if IPA were to truck the major volumes of coal involved from Provo. it would require increased travel over roads that are not regularly subjected to such high coal truck volumes and would generate logistical and political problems that would further render such transportation infeasible.

Moreover, IGS is not physically designed, equipped or operated to handle such large volumes of truck deliveries.

Finally, there are no navigable waterways between the issue origins/interchange and IGS, and as such, there is no effective water competition.

III-A Stand-Alone
Traffic Group

BEFORE THE
SURFACE TRANSPORTATION BOARD

INTERMOUNTAIN POWER AGENCY Complainant, v. UNION PACIFIC RAILROAD COMPANY Defendant.	)	Docket No. 42136

PART III

A. STAND-ALONE TRAFFIC GROUP

IPA has determined the maximum lawful rates for UP's transportation of coal to IPA's Intermountain Generating Station ("IGS") utilizing the stand-alone cost ("SAC") constraint of the *Coal Rate Guidelines*.[1] IPA has created the Intermountain Railroad ("IRR") as its hypothetical least-cost, most-efficient stand-alone railroad ("SARR") for SAC purposes.

Exhibit III-A-1 is a schematic of the IRR's layout. The IRR system consists of 174.96 constructed route miles. As shown in Exhibit III-A-1, the system is located entirely within the state of Utah and replicates UP's system from Provo, Utah on the northeast to Milford, Utah on the southwest. The IRR system serves one coal origin (the Sharp loadout), one coal destination (IGS), and several

[1] The maximum rates are set forth in Part III-G; the evidence in that Part is sponsored by IPA Witnesses Thomas D. Crowley and Daniel L. Fapp.

origins/destinations for non-coal interline forward and interline received traffic (including in particular the Moroni Feed Company facility at Sharp, hereinafter referred to as the "Sharp grain loop"). The IRR has no branch lines, and connects with the privately-owned IPP Industrial Lead 1.55 miles west of Lynndyl.

The IRR's main lines consist of single track with passing sidings totaling 213.08 track miles. The main lines consist of continuous welded rail similar to that used by UP on heavy-haul routes. IPA describes other aspects of the IRR system in Part III-B of its Opening Evidence

The IRR interchanges traffic with the residual UP at Provo, Lynndyl and Milford and with the Utah Railway ("URC") at Provo[2]:

TABLE III-A-1 IRR INTERCHANGE LOCATIONS	
Location	**Carrier**
Provo, Utah	UP, URC
Lynndyl, Utah	UP
Milford, Utah	UP

IPA e-workpapers "IPA Coal Traffic Forecast Opening.xlsx," and "Non-Coal Revenue Forecast Opening.xlsx" show the volumes and on and off locations for all IRR traffic over the November 2, 2012 through November 1, 2022 time period.

[2] As described in Part III-C-2 below, the IRR physically exchanges trains with UP and with URC at several locations in the vicinity of Provo.

1. Stand-Alone Railroad Traffic

The IRR traffic group logically divides into coal and non-coal traffic Almost all of the coal traffic on the IRR moves in unit trains or trainload service. The IRR originates and/or delivers some of its coal traffic, and the IRR provides overhead service for other coal movements. The only coal destination served directly by the IRR is IGS. The IRR moves both issue and non-issue coal traffic to IGS. All other non-issue coal traffic moving on the IRR is interchanged to UP for delivery to its ultimate destination.

With the exception of a relatively small volume of general freight traffic that the IRR originates or terminates on its system (and interlines with UP), the IRR's non-coal traffic consists entirely of overhead movements. Trains moving overhead on the IRR system are transported intact, with no classification or switching activities performed at the interchange points except for the occasional switching of bad-order/repaired cars and the occasional pick-up or delivery of cars at intermediate points served by the IRR. The originated/ terminated traffic includes unit trains that the IRR receives from UP at Provo and terminates on the Sharp grain loop (the empty trains are returned to UP at Provo).

IPA developed the IRR traffic group utilizing a combination of different data sources, including: (a) UP's historic revenue, car movement, train event, and routing and density records; (b) UP's Prophecy forecast data; (c) UP's rail transportation contracts and other pricing information;[3] (d) IPA's internal coal volume forecast; (e) information developed by the Department of Energy's Energy Information Administration ("EIA"); (f) information developed by the U.S. Department of Agriculture ("USDA"); (g) analyses conducted by IPA Witnesses Thomas D. Crowley and Daniel L. Fapp; and (h) information in UP's shareholder reports, SEC filings, and equity analyst presentations.

IPA selected individual UP shipments (by origin and final destination points) that would move over the IRR for the one-year period beginning July 1, 2011 and ending June 30, 2012 ("Base Year")[4]

a. **Coal Traffic**

Coal traffic, consisting of unit train and/or trainload movements, comprises approximately 42% of the IRR's first full-year tons. The IRR directly serves one coal load out and also receives coal in interchange from both URC and UP at Provo and from UP at Lynndyl. The only power plant that the IRR serves directly is IGS. There are three basic categories of coal traffic on the IRR system. (i) issue traffic to IGS; (ii) non-issue traffic to IGS; and (iii) non-issue traffic moving to destinations other than IGS.

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[3] By agreement of the parties, UP limited its production of non-coal contracts and pricing instruments to a defined subset of the total set of responsive documents. The parties further agreed that UP would not take issue with IPA's reliance on that subset as a basis for drawing inferences regarding the balance of UP's contracts and pricing instruments.

[4] IPA's electronic workpapers include the queries that IPA utilized to draw traffic and revenue information from UP-produced traffic data.

Coal Traffic to IGS. The issue traffic moving to IGS includes Utah coal traffic that originates on the URC and that the IRR receives in interchange from the URC at Provo for delivery to IGS. The URC handles the upstream portion of these movements pursuant to a long-term contract with IPA that remains in effect until { }. UP's contract for delivery service for these URC-originated volumes expired at the end of 2010.

The non-issue coal traffic moving to IGS via the IRR includes coal originating at the Sharp coal loadout. The IRR moves this coal in single-line service from Sharp to the IGS facility. The IRR also handles a small volume of coal moving to IGS as cross-over traffic (*i.e.*, real-world single-line traffic that the UP originates at the Skyline Mine and that the IRR will handle from Provo to IGS).

Non-IPA Coal Traffic. The IRR also handles coal traffic for shippers other than IPA. This traffic includes non-issue coal traffic moving: (1) from the URC interchange at Provo to Milford; (2) from the UP interchanges at Provo or Lynndyl to Milford; or (3) from the Sharp loadout to the UP interchanges at Provo or Milford. The IRR's non-issue coal traffic is a combination of export coal, utility coal, and industrial coal from Utah, Colorado, and Powder River Basin ("PRB") origins.

IPA e-workpaper "IPA Traffic Forecast.xlsx" shows detailed movement information for all coal handled by the IRR, along with the Base Year volumes attributable to each

b. <u>Non-Coal Traffic</u>

The IRR also handles a substantial volume of non-coal traffic. This traffic comprises approximately 58% of the IRR's first-year tons As noted, the IRR generally receives and delivers this traffic in intact trainloads, and handles this traffic as a bridge carrier replacing UP for a portion of its movement over the IRR. IPA's e-workpaper "Non-Coal Revenue Forecast Opening.xlsx" shows all on-system and off-system locations for all the non-coal movements handled by the IRR for the November 2, 2012 – November 1, 2022 time period. Principally, this traffic moves between Milford and Lynndyl or Provo. This traffic also includes interline forwarded and interline received non-coal traffic that the IRR originates or terminates at five points (Nephi, Sharp, Martmar, Delta and Bloom).[5]

The non-coal traffic may be broken down into general categories as follows:

[5] Except for the grain traffic destined to the Sharp grain loop, which moves on separate unit trains, this traffic moves on through (overhead) trains which stop on the IRR to pick up or deliver cars to local industries at the indicated locations. Some of these trains are destined to Milford, where they are interchanged to UP which provides the ultimate delivery for these movements

TABLE III-A-2 Summary of First Year IRR Non-Coal Traffic		
Description	Cars/Containers (thousands)	Tons (millions)
Automotive	11.67	0.22
Agricultural	12.25	1.29
Intermodal/Other	382.23	11.76
Source: e-workpaper "Non-Coal Revenue Forecast Opening.xlsx."		

c. **Rerouted Traffic**

The IRR does not reroute any traffic.

2. **Volumes (Historical and Projected)**

As noted above, the IRR moves both coal and non-coal traffic. A detailed schedule showing all projected coal volumes for the IRR for each year or partial year of the DCF period is shown in e-workpaper "IPA Coal Traffic Forecast Opening.xlsx." Conversely, a detailed schedule showing all projected non-coal volumes for the IRR for each year or partial year of the DCF period is shown in e-workpaper "Non-Coal Revenue Forecast Opening.xlsx."

a. **IGS Coal Traffic**

IPA bases the IRR's coal volumes moving to IGS (including both issue and non-issue IPA coal movements) on IPA's internal forecast. *See* e-workpaper "IGS Coal Traffic Forecast xlsx." This forecast, which IPA produced to UP in discovery, reflects the most recently available information regarding IPA's coal supply agreements and its expectations regarding future coal sources and volumes on an annual basis. In order to calculate the volumes for the final two months of 2012, IPA applied the following formula using the information in its forecast: (2012 IPA Annual Internal Forecast Volumes / 12 months) x 2 months = 2012 IPA Annual Internal Forecast Volumes for November 2, 2012 through December 31, 2012.

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b. Non-IPA Coal Traffic

IPA developed the IRR's non-IPA coal traffic volumes using UP's traffic records and Prophecy forecasts (each of which UP produced in discovery in this case) and using UP's various earnings releases.

i. Nov. 2-Dec. 31, 2012 Non-IPA Coal Volumes

After selecting coal traffic for the Base Year from traffic records that UP provided in discovery, IPA developed the IRR's non-IPA coal volumes for the first two months of the IRR's operations (*i.e.*, November 2, 2012 through December 31, 2012) using a combination of UP's 4Q 2011 earnings release and UP's 4Q2012 region-specific Prophecy forecast data.

For Utah- and Colorado-originated coal, IPA calculated the rate of change between UP's 4Q2011 actual coal volumes as reported in UP's 4Q2011 earnings release[6] (excluding the IPA coal volumes) and UP's 4Q2012 region-specific Prophecy data (again excluding the IPA coal volumes) for the Craig, West Colorado, and West Utah regions. Because UP's Prophecy data and its earnings releases use similar regional measures, it was proper for IPA to compare these two UP data sources. IPA then applied this calculated 2011-2012 rate of change to the volumes of Utah- and Colorado-originated coal that it had selected from UP's actual November-December 2011 traffic records to yield volume estimates for November 2, 2012 through December 31, 2012.

For PRB coal traffic, IPA used a similar approach. Specifically, IPA compared UP's actual 4Q2011 PRB coal volumes (as reported in UP's 4Q2011 earnings release) to UP's 4Q2012 Prophecy forecast data for the Powder River region to develop an annual rate of change. IPA then applied this 2011-2012 rate of change to all selected PRB-originated coal traffic for the November and December 2011 time period in order to develop PRB coal volume estimates for November 2, 2012 through December 31, 2012.

ii. <u>2013 Non-IPA Coal Volumes</u>

In order to develop its estimate of 2013 non-IPA coal volumes, IPA followed two principal steps. First, IPA developed an estimate of full-year 2012 volumes for the coal traffic volumes it had selected from UP's Base Year traffic

[6] UP's 2011 Quarterly Analyst presentations, as produced by UP's Investor Relations department, reported the total tons of coal that UP transported for PRB and Colorado/Utah origins in each quarter of 2011.

records (July 2011 through June 2012), and second, IPA indexed those volumes forward to 2013.

Full-Year 2012 Volume Levels: Because UP's actual traffic records were available only through June of 2012, IPA utilized a combination of different sources in order to develop a full-year's estimate of 2012 non-IPA coal volumes. For Utah- and Colorado-originated coal, IPA calculated the rate of change between: (i) the sum of UP's 3Q and 4Q2011 actual coal volumes as reported in UP's 3Q and 4Q2011 earnings releases (excluding IPA coal volumes); and (ii) the sum of UP's 3Q12 actual coal volumes as reported in UP's 3Q2012 earnings release[7] and UP's 4Q2012 Prophecy data (excluding IPA coal volumes). IPA applied this 2011-2012 rate of change to the selected coal traffic moving in the July through December 2011 time period in order to develop July through December 2012 volumes for this traffic.

For PRB coal traffic, IPA developed a year-over-year rate of change by comparing: (i) UP's actual 3Q and 4Q2011 PRB coal volumes (as reported in UP's 3Q and 4Q2011 earnings releases); to (ii) the sum of UP's actual 3Q2012 PRB volumes (as reported in UP's 3Q2012 earnings release) and UP's 4Q2012 Prophecy forecast data for PRB volumes. IPA then applied this rate of change to

[7] UP's 2012 Quarterly Analyst presentations as produced by UP's Investor Relations department reported the total tons transported for PRB and Colorado/Utah coal in each of the first three quarters of 2012.

all selected PRB-originated coal traffic for the July through December 2011 time period in order to develop July through December 2012 coal volumes.

IPA next added the actual 1Q and 2Q2012 coal volumes traversing the IRR to the estimated 3Q and 4Q2012 IRR coal volumes to yield full-year 2012 coal volume levels for the selected coal traffic

2013 Volume Levels: IPA next utilized the EIA's Annual Energy Outlook ("AEO") 2012 coal production forecast by coal supply and coal demand region in order to develop annual rates of change from 2012 to 2013.[8] IPA applied the annual rates of change for 2013 to the IRR's 2012 coal volumes based upon each movement's origin and destination region. For example, IPA adjusted coal volumes moving from the Jacobs Ranch Mine in the PRB to { } using the forecasted change in coal production for coal moving between the EIA's Wyoming PRB supply region and the EIA's Colorado, Utah, and Nevada demand region.

iii. <u>2014-2021 Non-IPA Coal Volumes</u>

For the years 2014 through 2021, IPA utilized the EIA's AEO 2012 coal production forecast by coal supply and coal demand region in order to develop annual rates of change, and then IPA applied those rates of change to prior year traffic levels. For example, IPA applied the rate of change in coal

[8] The EIA's Coal Marketing Module ("CMM") identifies thirteen coal supply regions, which include the Rocky Mountain Region (UT and CO), and the Wyoming PRB, and sixteen coal demand regions.

production forecasted by the EIA between 2013 and 2014 to the 2013 forecasted traffic in order to develop an estimate of 2014 traffic levels.

iv. Jan. 1-Nov. 1, 2022 Non-IPA Coal Volumes

For January 1, 2022 through November 1, 2022, IPA developed IRR coal traffic volumes (except IPA's coal traffic) by applying the EIA's forecasted rate of change in coal production between 2021 and 2022 to the forecasted 2021 traffic levels, and by multiplying that result by 83.33% to reflects ten months' production (*i.e.*, 10/12^{ths} of a year).

c. IRR Non-Coal Traffic

The IRR's non-coal traffic includes automotive, agricultural, intermodal, industrial products, and other traffic.

In order to determine volume levels for the IRR's non-coal traffic (*i.e.*, automotive, agricultural, intermodal, and other non-coal traffic), IPA first drew information regarding Base Year (July 2011 through June 2012) non-coal volumes moving over the IRR system from the traffic records that UP produced in discovery in this case. *See* e-workpaper "Non-Coal Revenue Forecast Opening.xlsx." IPA next utilized a combination of Prophecy data, UP earnings releases and various public data sources (*e.g.*, filings before the Securities Exchange Commission ("SEC"), EIA forecasts, and United States Department of Agriculture ("USDA") forecasts) to develop non-coal volume data for the entire life of the IRR.

i. **Automotive Traffic Volumes**

To develop IRR automotive traffic levels for the time period from November 2, 2012 through December 31, 2012, IPA began with selected Base Year automotive traffic volumes for November and December of 2011 that it obtained from UP's traffic records. IPA next calculated the rate of change between UP's forecasted system-wide automotive traffic volumes from the 4Q12 Prophecy data and actual system-wide 4Q2011 automotive traffic volumes as reported in UP's SEC Form 10-K report. IPA applied that rate of change to the selected traffic volumes for November and December of 2011.

As with IPA's development of 2013 coal volumes, IPA followed two principal steps in order to develop its estimate of the IRR's 2013 automotive (and other non-coal) volumes. First, IPA developed an estimate of full-year 2012 volumes for the automotive traffic it selected from UP's Base Year traffic records (July 2011 through June 2012), and second, IPA indexed those volumes forward to 2013.

Full-Year 2012 Volume Levels: Because UP's actual traffic records were available only through June of 2012, IPA calculated the rate of change between the combined 3Q-4Q2011 UP reported system-wide automobile traffic volumes and the combination of 3Q2012 reported and 4Q2012 UP Prophecy system-wide automotive traffic volumes. IPA applied this rate of change to the selected automotive traffic moving in the July through December 2011 time period in order to develop July through December 2012 volumes for this traffic.

IPA next added the actual 1Q and 2Q2012 automotive volumes traversing the IRR to the actual 3Q and estimated 4Q2012 IRR automotive volumes in order to develop full-year 2012 automotive volume levels for the selected traffic. (IPA used the same methodology to develop 2012 volume levels for the other categories of non-coal selected traffic.)

Remaining Years' Volume Levels: To forecast 2013 automotive traffic levels, IPA applied the annual forecasted change in new automobile and light truck sales between 2012 and 2013 (as forecasted by the EIA in its AEO 2012 forecast) to the 2012 IRR automotive traffic levels.[9]

For 2014 through 2021, IPA used the annual forecasted change in new automobile and light truck sales as forecasted by the EIA in its AEO 2012 automobile and light truck sales forecast to adjust annual automotive volumes.

For January 2022 through November 1, 2022, IPA applied 10/12ths (or 83.33 percent) of the annual rate of change in the EIA's AEO 2012 forecast of automobile and light truck sales between 2021 and 2022 to the 2021 forecasted volume levels.

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[9] Analysis of historic UP auto traffic data shows an 87 percent correlation between UP automotive traffic levels and new car and light truck sales. Therefore, the forecasted change in future new automobiles and light trucks provides a reliable forecast of future auto traffic on the UP. *See* e-workpaper "Historic Relationship Between UP Auto Traffic and New Car Sales (1997-2010).xlsx."

ii. Agricultural Traffic Volumes

Beginning with the November and December 2011 agricultural traffic that it selected from UP's traffic records, IPA developed agriculture traffic volumes for the November 2 through December 31, 2012 time period by applying the rate of change between forecasted system-wide agricultural traffic volumes from the 4Q2012 UP Prophecy data and actual system-wide 4Q2011 agricultural traffic volumes reported in UP's SEC Form 10-K report

IPA developed an estimate of 2012 full-year agricultural volumes by applying the rate of change between combined 3Q-4Q2011 UP reported system-wide agricultural traffic volumes and the combination of 3Q2012 reported and 4Q2012 UP Prophecy system-wide agricultural traffic volumes to selected July through December 2011 agricultural traffic. IPA then added this forecasted agricultural traffic for the second half of 2012 to the selected traffic moving over the IRR between January and June 2012 to arrive at 2012 traffic volumes.

To forecast 2013 agricultural traffic levels, IPA applied the annual forecasted change in agricultural production between 2012 and 2013 – as published in the USDA Agricultural Projections to 2021 (OCE-2012-1)[10] – to the 2012 IRR agricultural traffic level that IPA developed.

[10] The USDA forecasts estimate future commodity volumes on a commodity specific basis, *i e*, bushels of corn, bushels of wheat, etc To accommodate the different relative measures, all products were converted to short tons using USDA supplied conversion factors. This same approach was utilized in the recent AEPCO rate case.

IPA developed 2014 to 2021 agricultural volumes using the annual forecasted change in U.S. agricultural production as estimated in the United States Department of Agriculture Agricultural Projections to 2021 (OCE-2012-1).

Because the USDA projections only extend to 2021, IPA used the growth in agricultural production between 2020 and 2021 as a surrogate for the change in production between 2021 and 2022. In other words, IPA held the growth rate constant for this traffic the final year of the DCF period. To develop January through November 1, 2022 traffic volumes, IPA applied 10/12^ths^ of the annual rate of change between 2020 and 2021 to the 2021 traffic.

iii. Intermodal, Industrial, and Other Non-Coal Volumes

IPA developed traffic volumes for its remaining categories of non-coal traffic (*i.e.*, Intermodal, Industrial, other) in a similar manner. In order to calculate November 2 through December 31, 2012 traffic volumes, IPA applied the change between forecasted system-wide traffic volumes developed from the 4Q2012 UP Prophecy data and actual system-wide 4Q2011 traffic volumes the reported in UP's SEC Form 10-K report by commodity group[11] to the November and December 2011 selected traffic volumes.

IPA developed full-year 2012 estimates of these traffic categories by indexing the selected July through December 2011 traffic to the second half of

[11] {

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2012 by the rate of change between combined 3Q-4Q2011 UP reported system-wide traffic volumes and the combination of 3Q2012 reported and 4Q2012 UP Prophecy system-wide traffic volumes by commodity group. IPA then added this forecasted traffic for the second half of 2012 to the selected traffic moving over the IRR between January and June 2012 to determine full-year 2012 traffic volumes.

To forecast 2013 traffic levels, IPA applied the annual forecasted change for 2013 in EIA's AEO 2012 Industrial Output Forecast to the 2012 IRR traffic by commodity group. The EIA forecast categorizes commodities by NAICS codes, which were then converted to 2-digit STCC. The EIA forecasts by 2-digit STCC were then applied to the 2012 traffic data by STCC code to develop January to December 2013 traffic levels

For the years 2014 to 2021, IPA utilized the annual change in the EIA's AEO 2012 Industrial Output Forecast to adjust each traffic volume.

For January 2022 through November 1, 2022, IPA applied 10/12ths, or 83.33 percent, of the annual rates of change between 2021 and 2022 in the EIA's AEO 2012 Industrial Output Forecast to the 2021 forecasted traffic levels to develop 10 months of 2022 traffic by 2-digit STCC.

d. Peak Year Traffic

The peak traffic year for the IRR will be the final full year analyzed under the DCF Model, which in this case is November 2, 2021 through November 1, 2022 (sometimes subsequently referred to herein as "2022"). Taking account of all adjustments to the Base Year volumes for the various general categories of IRR traffic, as described in this Subpart III-A-2 and the e-workpapers referenced herein, the IRR's peak year traffic is as follows:

TABLE III-A-3
Summary of IRR Peak Year Traffic

Commodity	Carloads/Units	Net Tons
Coal	95,617	10,188,273
Automotive	13,666	253,309
Agricultural	13,002	1,371,681
Intermodal/Other	460.977	14,093,716

Source. e-workpapers "IPA Coal Traffic Forecast Opening xlsx," and "Non-Coal Revenue Forecast Opening xlsx."

3. Revenues (Historical and Projected)

In Ex Parte No. 347 (Sub-No 3), *General Procedures for Presenting Evidence in Stand-Alone Coal Rate* Cases (STB served March 12, 2001), the Board directed that discussion of revenues, both historical and projected, be grouped under four headings: (a) single-line. (b) divisions – existing interchanges, (c) divisions – cross-over traffic (meaning new interchanges with the residual defendants), and (d) other. IPA has organized its discussion accordingly.

a. **Single-Line**

Single-line traffic refers to traffic that a SARR handles entirely from origin to destination. In its first full calendar year of operation (2013), the IRR would handle 2.2 million tons of coal in single-line service. This 2013 traffic includes non-issue coal moving from Sharp to IGS. Single-line traffic constitutes 23% of the IRR's total 2013 coal traffic and 10% of the IRR's total 2013 traffic volume including non-coal traffic.

Stand-alone revenues for IPA's non-issue coal traffic are calculated based on the base rates and fuel surcharges established by UP in Item 6200-A of Common Carrier Tariff 4222 and the volumes discussed above. *See* e-workpaper "Coal Revenue Forecast Opening.xlsx."

b. **Divisions – Existing Interchanges**

Divisions – Existing Interchanges refer to traffic that UP presently interchanges with URC that the IRR will interchange at the same location. The IRR's 2013 traffic includes approximately 2.6 million tons of coal traffic that IRR interchanges with URC, including the issue traffic moving via the IRR from Provo to IGS Traffic that the IRR receives in interchange from URC comprises 28% of the IRR's total 2013 coal traffic.

Consistent with SAC theory and Board precedent, *e.g* , *FMC*, 4 S.T.B. at 725, the IRR's revenue or division on traffic that it interchanges (as UP does currently) with URC, equals the revenues earned by UP on such traffic. In the case of the issue traffic moving on the IRR from Provo to IGS, IPA derived these revenues from the rates and terms set forth in Item 6200-A of UP Common Carrier Tariff 4222 and the projected volumes for these movements. Those revenues are summarized in e-workpaper "Coal Revenue Forecast Opening.xlsx."

c. **Divisions – Cross-Over Traffic**

Cross-over traffic refers to traffic that the IRR exchanges with the residual UP at one or more new, hypothetical interchange(s) because the IRR handles a shorter portion of the movement than the real-world UP This category constitutes the largest category of the IRR's traffic. The cross-over traffic in the IRR's first full year of operations consists of 4.6 million tons of coal, 4.6 million intermodal tons, and 8.6 million tons of other freight. These volumes constitute 49% of the IRR's total tons of coal and 79% of all of the IRR's first-year net tons.

As described in greater detail in Part I, IPA has developed its SARR in reliance on the Board's long-standing policy of allowing shippers to include cross-over traffic in their systems. In that regard, while the Board recently proposed in Ex Parte No. 715 to introduce certain limitations on the use of cross-over traffic in stand-alone cost cases, the Board emphasized that it was not proposing to impose those limitations in pending cases. *Rate Regulation Reforms*, slip op. at 17 n.11. The Board explained that making such changes would not be fair to parties in pending cases who had relied on the Board's historic practice.

Because cross-over traffic does not entail a real-world interchange, an allocation or division of revenues between the SARR and the residual incumbent must be imputed or inferred As explained in Part I, IPA applied the

Board's average total cost ("ATC") procedures for calculating revenue divisions on cross-over traffic adopted in *Major Issues* as modified in *WFA I*, slip op. at 11-14 and *AEP Texas North Co. v BNSF Ry.*, NOR 41191 (Sub-No. 1). slip op. at 15-16 (STB served Sept. 10, 2007) ("*AEP Texas*"), *i e*, "Modified ATC." While the Board proposed the use of "Alternative ATC" in Ex Parte No. 715, the Board explained that it intended this new methodology to apply in "future" cases. *Rate Regulation Reforms*, slip op. at 18. For the reasons set forth both in Part I and in the filings IPA has made in Ex Parte No. 715 (which IPA incorporates by reference), the Board should continue to rely upon Modified ATC as its divisions methodology for cross-over traffic. Nevertheless, IPA also has included calculations in this Opening Evidence based on Alternative ATC in order to demonstrate that the issue does not make a substantial difference in the outcome of this case.

The ATC method of allocating revenues involves comparing the variable and fixed costs (with the unallocable fixed costs being allocated based on UP route miles and density) on the SARR's segment and those of the residual incumbent on the cross-over traffic. The first step in applying ATC is to determine the variable costs per net ton for the IRR portion of each cross-over movement in the IRR traffic group. IPA did so utilizing the nine (9) URCS inputs identified in *Major Issues* for each movement, as agreed upon by the parties in the

Joint Submission of Operating Characteristics filed October 16, 2012.[12] IPA utilized STB's 2011 URCS unit costs for UP. The URCS Phase III cost program was run using those inputs and unit costs to calculate the variable cost for the IRR portion of each unique movement.[13]

The next step involves determining the fixed costs for each movement's IRR routing. IPA did so by utilizing density and movement routing data produced by UP in discovery [14] Specifically, IPA determined the density and distance between reported stations along each movement's IRR route. The next step is to calculate the fixed costs for the IRR portion of each cross-over movement. To do so, IPA first determined 2011 UP fixed costs per route mile by subtracting UP's total variable costs from its total system costs as identified under 2011 URCS, and then dividing UP's resulting total fixed costs by its total system route miles.[15] UP's aggregate annual fixed costs for the "on-SARR" route were determined by multiplying the 2011 system fixed cost per route mile by the distance between each station along the IRR's route of movement and dividing by the density between each station to develop a fixed cost per net ton for each inter-

[12] As is the norm when costing intermodal movements, IPA selected the appropriate service plan when performing the Phase III URCS run.

[13] The results are shown in e-workpaper "IPA_ATC_URCS_Variable_Cost_IRR_Traffic_2011_V2.xlsx."

[14] UP System density data from 2011 is the most recent data available for IPA's use in this case.

[15] Total route miles are taken from UP's 2011 Annual Report Form R-1, Schedule 700, Line 57, Column (c).

station segment. Total fixed costs per ton then equal the sum of the inter-station fixed costs per ton along the IRR route of movement.[16]

Similar calculations are then made to determine the variable and fixed costs over the residual UP for the IRR's cross-over traffic. Utilizing the off-SARR routings identified in data produced by UP in discovery, IPA calculated the variable and average fixed costs for the UP portion of each cross-over movement in the same manner as those associated with the IRR portion. The segment densities were determined using UP's 2011 system densities. The densities were then multiplied by the off-IRR route miles for that segment, and the sum of these products was divided by each movement's total off-IRR route miles to yield a weighted average density for each movement's route. The IRR's share of each cross-over movement's total revenue under ATC is then determined as follows:

(i) Determine if contribution was positive or negative, *i.e.*, whether the total movement revenues exceeded the sum of the variable costs for the on-IRR and off-IRR portions of the movement;

(ii) For movements with negative contribution (variable costs exceeding revenues), ATC allocates the revenues between the IRR and the residual incumbent based on their ratio of variable costs;

(iii) For movements with positive contribution (revenues exceeding variable costs):

   a. Calculate the movement's total contribution by subtracting the total variable costs from the total movement revenues.

[16] The results are shown in e-workpaper "Expanded_Waybill_Data_ATC_Percentages_IPAOpen.xlsx."

b. First allocate revenues to the IRR and the residual incumbent to cover each railroad's variable costs.

c. Allocate the contribution by.

   (1) calculating the total on-IRR and off-IRR cost per net ton for each movement by adding the respective variable and fixed cost per ton,

   (2) calculating the ratio of on-IRR total costs to total movement costs by dividing on-IRR total costs by on-IRR plus off-IRR total costs; and

   (3) applying the ratio in item (2) to the total contribution for the evaluated movement to arrive at the IRR share of the total contribution for each cross-over movement; and

d. Develop the ATC division percentage by adding the IRR variable cost to the IRR share of contribution and dividing that sum by the total movement revenue.

Once calculated for the Base Year, the IRR revenue division for each cross-over movement is held constant during each year of the DCF model life, regardless of when during the model life the movement over the IRR starts or terminates. *See AEP Texas* (STB served Nov. 8, 2006), slip op. at 3. A complete summary of IPA's cross-over revenues allocated using the ATC methodology is shown in e-workpapers "Coal Revenue Forecast Opening.xlsx," and "Expanded_Waybill_Data_ATC_ Percentages_IPAOpen.xlsx."

For much of its traffic, UP imposes a car-mile based fuel surcharge on each carload based on the price of On-Highway Diesel Fuel ("HDF") as calculated by EIA. Fuel surcharges on intermodal and some contract carload traffic are in the form of a percentage-based addition to the freight rate that varies with the HDF level. The IRR's cross-over revenues will reflect the same fuel surcharge program and formulas that UP uses, and the IRR will thus collect an appropriate (per mile or percentage-based) fuel surcharge rate on each carload based on the traffic type and the IRR movement miles used in the ATC revenue division calculation. It is thus assumed that UP will continue to collect surcharges based on its current formulas on its portion of the movement.

Based on contracts provided by UP in discovery and on information posted on UP's website, IPA determined that {

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d. Projected Revenues

The procedures used to project IRR revenues from coal, intermodal, and other carload traffic over the November 2, 2012 through November 1, 2022 period are tailored to each particular traffic category, and rely on the most specific and accurate data made available by UP during discovery. *See* e-workpapers "Coal Revenue Forecast Opening.xlsx" and "Non-Coal Revenue Forecast Opening xlsx"

i. ***Revenues from IGS's Issue Traffic and its Sharp Non-Issue Coal Traffic***

The base revenue forecasts for: (i) the issue traffic (*i e* , IGS coal traffic that the IRR receives in interchange from URC at Provo); and (ii) non-issue traffic moving to IGS from Sharp (*i.e.*, traffic moving in single line-service) both are based on the terms of Item 6200-A of UP's Common Carrier Tariff 4222. Specifically, IPA maintained these rates at their current levels for the full DCF period, in accordance with the terms of the tariff item. IPA then applied these rates to the forecasted traffic moving to IGS in order to develop IPA traffic revenues.

In addition, because IPA's traffic is subject to the Item 695-series of UP's Tariff 6007-series, IPA calculated fuel surcharges for the IRR's IGS coal traffic. Fuel surcharges were calculated based on EIA's HDF forecasts as included in its November 2012 Short-Term Energy Outlook ("STEO")[17] and its 2012 (June release) AEO.[18] This approach is the same approach that the Board accepted in the *AEPCO 2011* case. *See AEPCO 2011* at 27-28 ("There are many different acceptable methods for combining projections and forecasts, and we find that AEPCO has utilized one of these methods, thus producing reasonably accurate estimate in this case"); *cf. id.* at 28 ("This is in direct contrast to the results obtained by the methodology used by defendants, which produces an inexplicable reduction in fuel prices at the start of 2012, without an explanation")

In particular, because EIA's STEO and AEO forecasts reflect different values for the projected HDF prices in the short-term, IPA developed a

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[17] The STEO forecasts prices two years into the future and is updated on a monthly basis.

[18] EIA's AEO forecasts are published on an annual basis and project HDF prices for twenty-five or more years. The most recent AEO forecast includes fuel prices for the years 2013 through 2035.

combination or hybrid HDF forecast based on these two EIA forecasts. In particular, IPA relied upon the more recently updated STEO forecast for the initial two-year period, and then applied the forecasted changes in the AEO forecast to the final STEO figure for the remaining time periods of the DCF model. Notably, the forecasted change in HDF prices correlates closely with the forecasted railroad fuel costs produced by Global Insight, which IPA is utilizing to forecast operating costs Stated differently, the use of this hybrid fuel price forecasting methodology ensures that the IRR's fuel surcharge revenues and its fuel costs are changing at a similar pace. Support for and development of IPA's hybrid index appears in IPA electronic workpapers "Hybrid HDF Forecast from STEO and AEO.xls."

ii. <u>Revenues from Cross-Over Traffic Moving to IGS</u>

As noted above, a portion of IGS's coal moves over the IRR in cross-over traffic service. This coal traffic actually moves in single-line UP service to the plant from the Skyline coal loadout. UP is the only carrier capable of originating this service. The IRR will handle the destination portion of these cross-over movements after receiving the traffic from UP at an assumed interchange in Provo.

IPA has calculated the IRR's revenues for this cross-over traffic using: (i) UP's common carrier rate for service from the Skyline Mine from Item 6200-A of UP's Common Carrier Tariff 4222; (ii) UP's fuel surcharge mechanism; and (iii) the Board's Modified ATC procedures.

Consistent with its treatment of future revenues subject to the other portions of UP's common carrier pricing authority, IPA has held the base rate constant for this service throughout the life of the IRR. IPA has escalated the UP fuel surcharge using the same hybrid methodology described above.

iii. Revenues from Third-Party Coal Traffic

The revenue forecasts for IRR coal traffic other than coal moving to IGS are based on the selected full-year July 2011 through June 2012 traffic and revenue data. For each movement, classified by origin, destination and governing pricing authority (*i.e.*, contract or common carriage), IPA calculated UP's net base year revenue per ton (before adding any fuel surcharge) from data UP provided in discovery.[19] "Net revenue" refers to UP's line-haul revenues and other transportation revenues less absorbed switching charges, contract refunds, other revenue claims and junction settlements.

For movements moving under a pricing authority that expired prior to November 2, 2012, IPA adjusted the last Base Year rates for the traffic to November 2, 2012 price levels by using the forecasted change in EIA's Coal Transportation Rate Escalator.[20] In this regard, UP's Prophecy data {

[19] Fuel surcharge revenues are calculated separately, as described *infra*.

[20] {

} therefore making it necessary for IPA to rely on the EIA Coal Transportation Rate Escalator.[21]

For traffic moving under a pricing authority that is to expire on or after November 2. 2012, IPA adjusted rates to November 2, 2012 price levels pursuant to the terms of the pricing authority. IPA developed rates for time periods after the expiration of the pricing authority by making adjustments on an annual basis by the forecasted change in the EIA's Coal Transportation Rate Escalator.

For traffic subject to rate adjustment mechanisms that used the All Inclusive Index – Less Fuel (error adjusted) ("AII-LF") or the Rail Cost Adjustment Factor – Unadjusted for Productivity ("RCAF-U"), IPA adjusted the subject rates based on: (i) actual AII-LF and RCAF-U values that were available; and (ii) the AII-LF and RCAF-U forecast included in the September 2012 IHS-Global Insight Rail Cost Adjustment Factor Forecast.

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[21] EIA uses its Transportation Rate Escalators to forecast future coal transportation prices.

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}. For movements moving under a valid pricing authority, IPA applied the fuel surcharge pursuant to the fuel surcharge clause of the pricing authority through the end of the DCF period in 2022. For example if the contract uses UP's Southern Powder River Basin ("SPRB") Mileage Surcharge, IPA assumed that the SPRB Mileage Fuel Surcharge will continue after contract expiration, rather than converting to some other UP fuel surcharge mechanism.

For movements as to which a specific fuel surcharge is not clearly identified in the governing UP pricing authority, IPA applied UP's Mileage Based Surcharge as outlined in Item-695 in UP-6600 (i.e., UP's standard non-PRB coal fuel surcharge mechanism). IPA relied upon its HDF forecast based on EIA's HDF forecasts as included in its November 2012 STEO and its 2012 (June release) AEO.

iv. <u>Revenues from Intermodal Traffic</u>

IPA developed base revenue levels for intermodal traffic using the pricing authorities that UP provided in discovery and the AII-LF. For movements governed by active pricing authorities that UP provided in discovery, IPA used the contract adjustment mechanism to escalate the last reported 2012 rates to November-December 2012 price levels. For movements as to which the subject contract expired prior to November 2, 2012, IPA adjusted the rates by the AII-LF to November-December 2012 price levels.

For the 2013 to 2022 time period, movements governed by pricing authorities that were provided by UP in discovery and had not expired were adjusted pursuant to the terms of the pricing authority. For time periods following the expiration of the pricing authority, IPA adjusted the rates by the AII-LF on a year-over-year basis.

Conversely, for movements governed by pricing authorities that UP did not provide in discovery, IPA adjusted rates for the 2013 to 2022 time period by applying the AII-LF on a year-over-year basis.

Fuel Surcharges: For movements governed by active pricing authorities that UP provided in discovery, IPA applied the fuel surcharge mechanism specified in the pricing authority (and all adjustments thereto) to the movement during the term of the existing contracts. After the contract expiration date, IPA applied fuel surcharges based on the terms specified in Items 780-790 of UP's Master Intermodal Transportation Agreement ("MITA") and EIA's HDF forecasts.

For movements governed by pricing authorities that UP provided in discovery but that expired prior to the SAC analysis period, IPA applied fuel surcharges based on UP's MITA terms and EIA's HDF forecasts.

For movements governed by pricing authorities that UP did not provide in discovery, IPA applied fuel surcharges based on UP's MITA terms and EIA's HDF forecasts.

v. Revenues from Automotive, Agricultural, and Other Non-Coal Traffic

For automotive, agricultural, and other non-coal movements governed by active contracts, tariffs, or rate sheets (collectively "pricing authorities") that UP provided in discovery, IPA used the applicable contract adjustment mechanism to escalate rates on a year-over-year basis during the term of the existing contracts. After the contract expiration date, IPA adjusted the movements' rates by the AII-LF on a year-over-year basis Similarly, for movements governed by pricing authorities that expired prior to the SAC analysis period (and movements governed by pricing authorities that UP did not produce in discovery), IPA adjusted rates by the AII-LF on a year-over-year basis.

For automotive, agricultural, and other movements to which fuel surcharges were applied in the Base Year, IPA determined whether the surcharges were rate-based or mileage-based using the provided waybill and fuel surcharge data and the provided contracts. IPA calculated fuel surcharge revenues for movements governed by active pricing authorities using the terms of the applicable fuel surcharge mechanism and all adjustments thereto specified in the pricing authority. For the time periods after the expiration of those pricing authorities, IPA applied fuel surcharges to this traffic based on UP's "Standard

Carload - HDF Indexed" rate-based (for movements with rate-based surcharges applied in the Base Year) or mileage-based (for movements with mileage-based surcharges applied in the Base Year) fuel surcharge programs and EIA's HDF forecasts as included in its November 2012 STEO and its 2012 (final release) AEO. IPA applied rate-based fuel surcharges to the IRR portion of the movement's base rates, and IPA applied mileage-based fuel surcharges to the IRR portion of the movement miles.

IPA also utilized UP's "Standard Carload - HDF Indexed" rate-based and mileage-based fuel surcharge programs and EIA's HDF forecasts to calculate fuel surcharge revenues for movements governed by pricing authorities that UP provided in discovery but that had expired prior to the SAC analysis period (or pricing authorities that UP did not produce in discovery).

III-B Stand-Alone
Railroad System

III. B. STAND-ALONE RAILROAD SYSTEM

In this Part IPA describes the IRR system's configuration and facilities including its route, track and yard facilities, and traffic control system. The evidence in this part is sponsored by IPA's operating and engineering experts, Paul Reistrup and Harvey Stone.

1. Route and Mileage

The IRR's route lies entirely within the state of Utah, and extends from Provo on the east to Milford on the west. Exhibit III-A-1 is a schematic map of the IRR's route.

a. Main Line

The IRR's main line starts at a point of connection with the residual UP's Provo Subdivision (which is also used by the URC) at Provo, and proceeds in a southwesterly direction to Lynndyl, replicating UP's "Coal Wye" tracks at Provo and a portion of UP's Sharp Subdivision. The main line then continues southwest to an interchange with UP at Milford, replicating a portion of UP's Lynndyl Subdivision. The IPP Industrial Lead (the spur to IGS) connects with the Lynndyl Subdivision main line 1.55 miles southwest of Lynndyl.

b. Branch Lines

The IRR has no branch lines. However, it owns 0.19 miles of the IPP Industrial Lead which extends 9 5 miles from Lynndyl to the IGS.

c. <u>Interchange Points</u>

The IRR interchanges coal and other traffic with UP at Provo, Lynndyl and Milford As described in Part III-C-2 below, the Provo interchanges with UP occur at three locations: the Coal Wye tracks in the case of westbound loaded coal trains coming from mines and loadouts reached via UP's Provo Subdivision; IPA's Springville railcar maintenance facility in the case of eastbound empty coal trains destined to the same mines/loadouts; and UP's Provo Yard located on the Sharp Subdivision just north of the connection between the IRR and UP at Sharp Sub Milepost 750.22.

The IRR also interchanges coal traffic with the URC at Provo, with the interchanges occurring at two locations. Westbound loaded trains are interchanged on the Coal Wye tracks. Eastbound empty coal trains are interchanged at IPA's Springville car repair facility. The IRR/URC interchange procedures are further described in Part III-C-2.

The traffic interchanged with UP and/or URC at each location is shown in the electronic workpapers for Part III-A. The IRR track configuration at each interchange point is shown in Exhibits III-B-1 and III-B-2.

All traffic is interchanged by the IRR with other carriers in intact trainloads. The coal traffic moves in unit trains with run-through locomotive power (except that, consistent with the real-world interchange arrangement between UP and URC, the IRR and URC continue to use their own locomotives for their respective portions of IRR-URC interline coal movements). The non-coal traffic is primarily overhead traffic that the IRR receives from and delivers to UP in complete trains, including run-through locomotives. Some of these trains carry interline forwarded or interline received traffic that the IRR originates or terminates at locally-served industries.

d. **Route Mileage**

The route mileages for the IRR's principal line segments are shown in Table III-B-1 below. Details are provided in e-workpaper "IRR Route Miles.xls." The UP operating timetables and track charts for all of the lines being replicated are contained in e-workpaper folder "III-B-1\Track Charts."

TABLE III-B-1
IRR LINE SEGMENTS AND ROUTE MILEAGE

Segment	UP Subdivision	Miles
Main Lines		
Provo to Lynndyl	Sharp	85.77[1]
Lynndyl to Milford	Lynndyl	89 00
Total Main Line miles		**174.77**
Other		
IRR-owned portion of IPP Industrial Lead	Connects with Lynndyl Sub	0 19
Total route miles		**174.96**

[1] Includes 1.25 route miles for the Coal Wye tracks connecting UP's Provo and Sharp Subdivisions at Provo.

All of the IRR's 174.96 route miles represent new construction by the IRR. The IRR does not operate over any joint facilities owned by other carriers. UP and URC operate over approximately two miles of IRR trackage between the connection with UP/URC tracks at Provo and IPA's Springville car repair facility located on the Sharp Subdivision in conjunction with the interchange of certain empty coal trains.

2. Track Miles and Weight of Track

The IRR's track and yard configurations reflect the IRR's peak-year traffic volumes and flows, the trains that will move over the IRR system in the peak week of the peak traffic year, the IRR operating plan developed by Mr Reistrup, and a simulation of the IRR's peak-period operations executed by IPA Witnesses Timothy Crowley and William Humphrey using the Rail Traffic Controller ("RTC") model.

Exhibit III-B-1 contains detailed schematic track diagrams for the IRR system. Schematics of the IRR's yards and N. Springville locomotive maintenance facility are contained in Exhibit III-B-2. The IRR's track miles are shown in Table III-B-2 below. Details (including a breakdown of the track miles by type of track) are provided in e-workpaper "Routes & Track Miles Summaries.xls."

TABLE III-B-2 IRR TRACK MILES	
	Miles
Main line track – Single first main track[1/]	174.96
– Other main track[2/]	24.02
Total main line track	198 98
Setout tracks	1.60
Yard tracks[3/]	12 50
Total track miles	**213.08**

[1/] Single first main track miles equal total constructed route miles.
[2/] Equals total miles for constructed second main tracks/passing sidings, including one of the two Coal Wye tracks at Provo
[3/] Includes all tracks in the IRR's yards and N Springville locomotive maintenance facility.

a. **Main Lines**

The IRR's track configuration is shown in Exhibit III-B-1. The IRR's main lines are comprised primarily of single track, with some sections of second main track (signaled passing sidings in Centralized Traffic Control "CTC" territory) or passing sidings at appropriate intervals. The IRR has a total of 20.30 track miles of second main track/passing sidings. The northeasterly 2.06 miles of the Sharp Subdivision, including the Coal Wye tracks at Provo, have been changed slightly from their real-world configuration to facilitate the interchange of trains with UP and URC. The IRR's trackage in this area is shown on page 1 of Exhibit III-B-1.[1] The reasons for the changes are explained in Part III-C-2-a below.

[1] The "real-world" layout of UP's trackage in the same area is shown in Exhibit III-B-3, and on pp. 18-19 (UP-IPA2-000000151-152) of UP's Sharp Subdivision track charts in e-workpaper folder "III-B-1\Track Charts."

All constructed mainline track (including passing sidings) consists of new 136-pound continuous welded rail ("CWR"). The IRR-owned portion of the IPP Industrial Lead (the spur that serves IGS), as well as yard and other tracks, consist of relay 115-pound CWR.

All of the IRR's track and structures are designed to accommodate a gross weight on rail ("GWR") of 286,000 pounds per car. The track and structures between Lynndyl and Milford are designed to accommodate maximum train speeds of 70 mph for intermodal trains, conditions and operating rules permitting, and 60 mph for all other trains (conditions permitting). All trains are limited to a maximum speed of 49 mph between Provo and Lynndyl, and 40 mph on the IPP Industrial Lead.

b/c. <u>Branch Lines and Sidings</u>

The IRR has no branch lines, but owns 0.19 miles of the IPP Industrial Lead. The connection to this spur from the Lynndyl Subdivision main line is shown on page 3 of Exhibit III-B-1. The IRR's passing sidings are considered part of its main tracks.

d. <u>Other Tracks</u>

Other tracks include yard tracks (including interchange and maintenance-of-way ("MOW") equipment storage tracks) and set-out tracks for bad order cars. Yard tracks are discussed in the next section. E-workpaper "Route & Track Miles Summaries.xls" details the track miles by type and quantity.

The IRR's setout tracks are used primarily in conjunction with its Failed/Dragging Equipment Detectors ("FEDs"). IPA Witness Reistrup has placed two setout tracks at each FED location on the Lynndyl Subdivision between Milford and Lynndyl, where traffic density is heaviest and includes time-sensitive intermodal trains. This avoids a situation where a train has to back up to reach a setout track if a FED finds a defect, which could tie up the busy main line. On the Sharp Subdivision between Provo and Lynndyl, where traffic volume is considerably lighter (a maximum of 15 trains per day, total in both directions, during the peak week, or an average of one train every 1.6 hours), Mr Reistrup concluded that only one setout track is needed at each FED location. If a train occasionally has to reverse direction to reach a setout track in this territory, the impact on transit time would be minor and there is a very small probability that other trains would be delayed as a result.

The IRR system has a total of seven FEDs, four on the Lynndyl Subdivision and three on the Sharp Subdivision. One FED on the Lynndyl Subdivision (at Milepost 580.00) is located less than a mile from the IRR's Milford yard, which has a setout track, so there is no need to add a second mainline setout track for this FED. The other three FEDs on the Lynndyl Subdivision each have two mainline setout tracks, one on each side of the FED. Thus, of the seven total FEDs on the revised IRR system, four have one associated mainline setout track and three have two associated mainline setout tracks, for a total of ten such tracks. All of these setout tracks are double-ended tracks, 860 feet in length between switches. This provides 600 feet in the clear to accommodate both the occasional bad-order car and the temporary storage of MOW equipment. (One double-ended setout track also is located in each of the IRR's interchange yards at Lynndyl and Milford.)

The IRR also has a 1,000-foot (in the clear) MOW equipment storage track, which is centrally located at the IRR's Lynndyl Yard. This track is included in the yard track quantity for the Lynndyl Yard.

The locations of the IRR's setout and MOW equipment storage tracks are shown in Exhibit III-B-1. Details on these tracks are provided in supplemental e-workpaper "Route & Track Miles Summaries.xls." These tracks consist of usable 115-pound CWR. The IRR has a total of 1.81 track miles for these tracks.

3. <u>Yards</u>

a. <u>Locations and Purpose</u>

As described in Part III-C below, the IRR does not need to conduct 1,000-mile or 1,500-mile inspections of any of its trains. Thus, it has no need for an inspection yard. It does have two small interchange yards, located at Lynndyl and Milford.

There is no need for an interchange yard at Provo. With respect to trains interchanged with UP at Provo, trains moving between points served by the IRR and coal mines/loadouts east of Provo reached via UP's Provo and Green River Subdivisions are interchanged on the Coal Wye tracks, which have been configured to accommodate the interchange of trains with UP as well as the interchange of loaded coal trains originated by the URC. Trains that UP originates or terminates at Provo or Salt Lake City (and beyond), and that the IRR moves to and from points reached via the Sharp Subdivision, are interchanged at Milepost 750 22 on the Sharp Subdivision.[2]

The locations of the Lynndyl and Milford interchange yards are shown in Exhibit III-B-1. Schematic diagrams of these yards are shown in Exhibit III-B-2 Lynndyl Yard and Milford Yard each has two relay/interchange tracks and an 860-foot, double-ended setout track. Lynndyl Yard, which is centrally located on the IRR system, also has a MOW equipment storage track 0.21 miles in length between turnouts.

b. <u>Miles and Weight of Yard Track</u>

The tracks at the IRR's N. Springville locomotive maintenance facility are also considered part of its yard tracks.[3] The IRR's yards (including the 1.21-mile MOW equipment storage track at Lynndyl Yard and the locomotive shop trackage) contain a total of 12.50 miles of track. Details are shown in e-

[2] This is consistent with the approach used by UP in its reply evidence in Docket No. 42127. *See* e-workpaper "UP 42127 Part III.C pdf" at III.C-39. The trains would be physically exchanged in the UP Yard at Provo which is located on UP's Sharp Subdivision just north of Milepost 750.22.

[3] The location of the locomotive maintenance facility is shown on page 1 of Exhibit III-B-1, and its layout (including fueling and other tracks) is shown on page 1 of Exhibit III-B-2.

workpaper "Route & Track Miles Summaries.xls." As shown in Exhibit III-B-1, all yard tracks have 115-pound relay CWR.

4. Other

a. Joint Facilities

The IRR route includes one joint facility that is owned by the IRR and used by UP and URC. This is the two-mile line segment between IPA's Springville car shop and the connection with the UP/URC tracks at the easterly terminus of the IRR at Provo. UP and URC use this segment to pick up empty IGS and other coal trains that move to Utah mines and coal loadouts located east of Provo.

b. Signal/Communications System

The IRR's Lynndyl Subdivision main line between Lynndyl and Milford is equipped with a CTC traffic control system, with powered switches that are controlled by centralized dispatchers located at the railroad's headquarters at Lynndyl. The main line between Provo and Lynndyl is non-CTC or "dark" territory. All mainline turnouts in CTC territory have power switches controlled by the dispatcher. In non-CTC territory train operations are controlled by track warrants issued by the dispatcher using radio communication. Mainline turnouts in non-CTC territory have power switches controlled by the locomotive engineers using remote-control equipment in the cabs of the road locomotives, which eliminates the need to hand-throw these switches. Interior yard switches and set-out/MOW equipment storage track switches are hand-thrown.

Communications are conducted using a combined fiber optics and microwave system, with fiber optics used where they are currently in place on the UP lines being replicated and microwave used on the IRR's other lines. The microwave system, where used, includes towers at the same locations where UP currently has such facilities. All locomotives, train and yard crewmen, dispatchers and field supervisory personnel, as well as hi-rail vehicles, are equipped with radios connected to the fiber optics/microwave system Certain employees are also equipped with mobile (cellular) telephones for emergency railroad use, as a back-up to the radios.

c. **<u>Turnouts, FEDs and AEI Scanners</u>**

All turnouts between the IRR's main tracks and passing sidings. and for the connections to the residual UP at Provo, the IPP Industrial Spur and the yard leads, are No. 15 turnouts which permit trains to operate through the turnout at a speed of up to 30 mph, conditions permitting. No. 10 turnouts are used within yards, for industry, setout and MOW equipment storage tracks, and for the interior switches on the Coal Wye tracks

The IRR has seven FEDs, which include hot-bearing, dragging-equipment. cracked-wheel and wide/shifted load detection systems. The FED locations are shown in Exhibit III-B-1 As noted earlier. each FED is accompanied by either one or two setout tracks, depending on the location and traffic volume. Each setout track is an 860-foot (0.16-mile) double-ended track to facilitate the setout of bad-order cars from trains operating in either direction.

These tracks are used primarily for temporary storage of bad-order cars detected by the FEDs, as well as for temporary storage of work equipment.

Automatic Equipment Identification ("AEI") scanners are located at or near each of the locations where the IRR interchanges trains with other railroads (Provo, Lynndyl and Milford) A total of three AEI scanners are thus provided, as shown in Exhibit III-B-1. The AEI scanners capture all train movements that occur on the IRR, including both local and interline movements

III-C Operating Plan

III. C. STAND-ALONE RAILROAD OPERATING PLAN

The IRR's operating plan has been developed by IPA Witness Paul Reistrup with assistance from a simulation of the IRR's peak-period operations by IPA Witnesses Timothy Crowley and William Humphrey using the RTC Model. The operating plan reflects a system extending between Provo, UT on the northeast and Milford, UT on the southwest, consisting of 174.96 route miles and 213.08 track miles. The IRR system serves one coal origin (the Sharp loadout), one coal destination (IGS), and several origins/destinations for non-coal interline forward and interline received traffic (including in particular the Moroni Feed Company grain loop at Sharp). The IRR has no branch lines, and connects with the privately-owned IPP Industrial Lead 1.55 miles west of Lynndyl. The IPP Industrial Lead extends 9 5 miles to IGS. The IRR interchanges traffic with the residual UP at Provo, Lynndyl and Milford and with the Utah Railway ("URC") at Provo.

The IRR's peak traffic year is November 2, 2021 through November 1, 2022 (hereinafter "2022"), which is the final year in the 10-year DCF period The IRR's traffic group consists of coal, intermodal and general freight traffic that moves primarily in unit train or trainload service (some general freight carloads originate or terminate at points served by the IRR).

The IRR will transport the following total traffic volumes in 2022:

TABLE III-C-1 IRR 2022 TRAFFIC VOLUME[1/]		
	Cars/Containers	**Millions of Tons**
Coal		
Local	19,287	2 20
Interline Forwarded	3,966	0.04
Interline Received	25,001	2.60
Overhead	47,363	4 94
Subtotal[1]	95,617	10 19
Intermodal – Overhead	368,543	5.52
General Freight		
Interline Forwarded	1,036	0.11
Interline Received[2]	1,039	0.11
Overhead	117,028	9.98
Total[3]	**583,262**	**25.91**

[1/] Includes both revenue and non-revenue (empty) cars/intermodal units

[2/] Includes grain traffic terminating on the Sharp grain loop.

[3/] Total may differ slightly from the sum of the individual items due to rounding.

1. <u>General Parameters</u>

The IRR's operating plan reflects the service the IRR needs to provide to the customers in its traffic group The IRR system is located entirely in Utah, and the railroad transports essentially three kinds of traffic: coal traffic that it originates and terminates or interlines with other carriers, non-coal (intermodal and other freight) traffic that is originated and terminated by other carriers and that the IRR handles exclusively in overhead service; and general freight traffic that the SARR originates or terminates at several points and interlines with UP. Trains moving overhead on the IRR system are transported intact, with no classification or switching activities performed at the interchange points except for the occasional switching of bad-order/repaired cars (as well as the occasional pick-up or delivery of cars at intermediate points served by the IRR). The IRR does not need to perform 1,000-mile or 1,500-mile inspections of any trains (although some empty coal trains are inspected by IPA, on the IRR's behalf, at IPA's Springville railcar maintenance facility located near Provo, as described below).

a. Traffic Flow and Interchange Points

The IRR's peak-year (2022) traffic volume consists of 10.19 million tons of coal traffic, 5.52 million tons of intermodal traffic, and 10.20 million tons of other freight traffic. The IRR's traffic flows include: (1) the issue IPA coal traffic moving from the interchange with URC at Provo to IGS and non-issue coal traffic moving from the Sharp loadout to IGS;[1] (2) non-issue coal traffic moving from the URC interchange at Provo to Milford, from the UP interchange at Provo or Lynndyl to Milford, or from the Sharp loadout to the UP interchange at Provo or Milford; (3) non-coal traffic moving in overhead service between Milford and Lynndyl or Provo; and (4) interline forwarded and interline received non-coal traffic that the IRR originates or terminates at five points (Nephi, Sharp, Martmar,

[1] Utah coal produced at the SUFCO mine and destined to IGS and other destinations is transloaded from trucks to railcars at the Sharp loadout located on the IRR's Sharp Subdivision near Levan, UT. The Sharp loadout is the only coal origin directly served by the IRR.

Delta and Bloom.[2] The peak-year traffic densities for the IRR's principal line segments are shown in Table III-C-2 below.

TABLE III-C-2 IRR 2022 TRAFFIC DENSITY BY LINE SEGMENT	
Line Segment[1/]	**Density (millions of gross tons per mile)**
Provo to Sharp	17.6
Sharp to Lynndyl	22.4
Lynndyl to IPP Industrial Lead	50.3
IPP Industrial Lead to Milford	40.9

[1/] Tonnages shown are the maximum tonnages moving over any part of each line segment and may not be uniform for the entire segment.

In addition to coal traffic originating at the URC interchange at Provo and the Sharp loadout, the IRR also moves coal traffic that is originated and terminated by UP in overhead service. The overhead coal traffic is primarily Utah, Colorado and Wyoming coal originated by UP and destined to power plants and industrial facilities in Nevada, Arizona and California.[3] In addition, the IRR moves intermodal and general freight traffic in overhead service (this traffic is originated and terminated, or received and delivered, by UP at various locations),

[2] Much of this traffic moves on through (overhead) trains which stop on the IRR to pick up or deliver cars to local industries at the indicated locations. Some of these trains are destined to Milford, where they are interchanged to UP which provides the ultimate delivery for these movements

[3] The Utah coal traffic is originated by UP at points east of Provo (*i.e.*, Skyline Mine) reached via UP's Provo Subdivision. The IRR also carries small amounts (less than 1,000 tons annually) of Northern Appalachian coal in overhead service, which UP receives in interchange at Chicago and delivers to destinations in California.

and some non-coal UP-interline traffic that the IRR originates or terminates (including grain traffic that terminates on the Sharp grain loop).

The IRR moves trains to and from three points of interchange with two other carriers, UP and the URC. From east to west, these interchanges are located at Provo, Lynndyl and Milford. The IRR interchanges trains with UP at all three locations; it interchanges trains with the URC only at Provo. As explained further below, the IRR physically exchanges trains with UP and with URC at several locations in the vicinity of Provo.

The IRR's operating plan accommodates the coal, intermodal and general freight trains moving over various parts of the IRR system during the peak one-week period in the peak traffic year (March 7 through March 13, 2022).[4] The trains that the IRR will transport during the peak week and corresponding study period for the RTC Model simulation of its operations (described below) are shown in e-workpaper "RTC List.xlsx."

The operating plan also reflects the IRR's relationship with the URC with respect to IPA and other coal traffic interchanged with that carrier. This relationship is based on UP's interchange and joint facility agreements with URC; the IRR steps into UP's shoes under these agreements.

URC and the IRR interchange loaded IPA coal trains on the IRR's "Coal Wye" tracks, which replicate UP tracks that connect UP's Provo and Sharp

[4] The peak-week train frequencies were developed using the procedures described in Part III-C-2-b below.

Subdivisions. These tracks, also known as the Ironton Crossover tracks, are shown on page 1 of Exhibit III-B-1. The URC removes its locomotives from the train and the IRR puts its own locomotives on the train as part of the interchange process. In the empty direction, the IRR moves the IPA coal trains from the IGS to IPA's railcar maintenance facility near Springville (located just south of Provo on the Sharp Subdivision), and removes its locomotives and takes them to the IRR N. Springville locomotive fueling/servicing facility. After the empty trains are inspected/serviced and reassembled by IPA personnel, the URC brings its locomotives and crew to the IPA car shop (using about two miles of IRR and IPA trackage), picks up the empty train, and moves it on to the URC-served origin loadout. These operations are consistent with the manner in which UP and URC interchange and operate the IPA coal trains in the real world.

The IRR interchanges coal and other trains with UP (all of which have run-through power) at three different locations in Provo. Westbound loaded coal trains originating at UP-served points east of Provo are interchanged on the Coal Wye tracks (*i.e.*, the same location where the URC and IRR interchange loaded coal trains). Empty eastbound coal trains destined to UP-served origin mines/loadouts east of Provo are interchanged between the IRR and UP at IPA's Springville railcar repair facility (just as empty coal trains destined for the URC are). Coal and other trains moving to/from points north of Provo (*i e.*. Salt Lake City or beyond) enter and exit the IRR at Milepost 750.22 on the Sharp

Subdivision (*i.e.*, the point where the IRR's Sharp Subdivision mainline connects with the residual UP's Sharp Subdivision tracks).

b. <u>Track and Yard Facilities</u>

The IRR's track and yard facilities are described in Part III-B-2, and shown schematically in Exhibits III-B-1 and III-B-2.

The IRR's main tracks between Lynndyl and Milford are constructed to a standard that allows for maximum train speeds of 70 mph for intermodal trains, conditions (including gradient and curvature) permitting, and 60 mph for all other trains (conditions permitting).[5] All trains are limited to a maximum speed of 49 mph between Lynndyl and Provo, which is non-CTC territory, and 40 mph on the IPP Industrial Lead. All tracks are being constructed to a standard that permits a maximum GWR of 286,000 pounds per car.

The IRR's Lynndyl Subdivision main line between Lynndyl and Milford is equipped with CTC and main-track power switches[6] due to its relatively heavy traffic volume and use by premium intermodal trains. CTC is not needed on the remainder of the railroad between Lynndyl and Provo, which has much lower traffic density and train frequencies than the Lynndyl Subdivision As

[5] These maximum train speeds are consistent with those set forth in UP's operating timetable for the Lynndyl Subdivision. The portion of the Lynndyl Subdivision replicated by the IRR consists of 89 miles of generally flat and straight railroad with infrequent curves of less than three degrees and a well-drained and stable subgrade.

[6] This includes the switch for the connection between the Lynndyl Subdivision mainline and the IPP Industrial Lead, which is located in CTC territory.

described in Part III-B-4-b above, engineer-controlled power switches are used for the turnouts connecting the non-CTC equipped main lines with passing sidings.

The IRR has two small interchange yards at Lynndyl and Milford, as described in Parts III-B-1-c and III-B-2 above.

c. **Trains and Equipment**

i. **Train Sizes**

The IRR operates complete trains, including coal trains, intermodal trains, and general freight trains, in local and interline (including overhead) service. The IRR's train sizes are the same as those for the comparable UP trains operated during the one-year period from July 1, 2011 through June 30, 2012 (the "Base Year"), which covers the four most recent calendar quarters for which UP produced train and car movement data in discovery. Non-coal trains have the same cars (or mix of cars) as the comparable UP trains that moved between the same points in the Base Year. All trains continue to have sufficient active road locomotives to provide a horsepower-to-trailing ton ratio that assures they are adequately powered to meet present contractual transit-time commitments and service requirements. This is confirmed by IPA's simulation of the IRR's operations using the RTC Model.

The IRR's operating plan assumes that the maximum train sizes for each train type and locomotive consists will remain the same throughout the 10-year DCF period. Increased volumes beyond those able to be transported on current maximum train sizes are accounted for by adding "growth" trains that are equivalent in size to the comparable trains that UP operated in the Base Year, as shown in the train and car data produced in discovery.

ii. Locomotives

The IRR requires a total of 14 locomotives to transport its trains moving in the first year of operations, including spares. The IRR operates a single type of locomotive: GE ES44-AC road locomotives. Since the IRR does not need to conduct any 1,000 or 1,500-mile inspections of its trains, it has no inspection yards and it has no need for any locomotives for yard switching.[7] All inspections, and related switching and assembly, of the IRR's empty coal trains are performed either by IRR utilizing contract services from IPA personnel at IPA's Springville railcar repair facility, or by the residual UP. The IRR's road locomotive requirements take into account the need to equalize the locomotive power used in run-through service for interline (including overhead) trains and an appropriate spare margin and peaking factor as described below.

Most IRR trains have three locomotives, usually in a 2x1 distributed power or "DP" configuration. If trains received by the IRR in interchange have locomotives in a non-DP configuration, the configuration is not changed when the train enters the IRR system. To the extent such trains contain more than three locomotives, the horsepower equivalent in ES44-AC locomotives is assumed since UP's train movement records do not show the locomotive types that were actually

[7] Nor does the IRR need any helper locomotives as its operations are confined to the relatively flat territory between Provo and Milford.

on the Base Year trains. However, all locomotives over and above three are isolated with throttles in the idle position while on the IRR since no more than three locomotives are needed to move any of the IRR's trains.

The count of road locomotives for the peak year includes a spare margin and a peaking factor, consistent with prior STB decisions (*e.g*, *WFA I*, slip op. at 33-34). The spare margin and peaking factor for the ES44-AC locomotives were calculated as follows:

Spare Margin. The locomotive hours spent on the IRR (as well as the number of locomotives required for the IRR's local movements) were developed from the analysis of the IRR's operations using the RTC Model, as described in Part III-C-2 below. The total number of locomotives required includes a spare margin of { } percent. This spare margin is based on information provided by UP in response to IPA's discovery requests.

Specifically, the locomotive spare margin is based on a UP spreadsheet produced in discovery in Docket No. 42127 entitled "UP Loco Utilization 2010.xlsx." This spreadsheet { } Using this information, a locomotive spare margin was developed and applied separately for coal, general freight and intermodal traffic types. In its November 10, 2011 Reply Evidence Narrative ("Reply Evidence") in Docket No. 42127, UP disagreed with IPA's calculation of the SARR locomotive spare margin in that proceeding based on the discovery data identified above. *See* e-workpaper "UP 42127 Part III.C.pdf" at III.C-14-16. IPA accepts UP's methodology of weighting the locomotive available time using IRR locomotive unit hours by train type, and has calculated the IRR spare margin for this proceeding using that methodology. The overall average locomotive spare margin for the IRR traffic, weighted on locomotive hours by traffic type, equals { } percent. The calculation of the locomotive spare margin is shown in e-workpaper "UP IRR Loco Utilization 2010.xls."

Peaking Factor. In addition to the locomotive percent spare margin, IPA's experts determined the IRR's peak locomotive requirements by applying the methodology approved by the Board in *Public Service Co. of Colorado d/b/a Xcel Energy v. Burlington Northern & Santa Fe Ry.*, NOR 42057 (STB served Jan. 19, 2005) ("*Xcel II*") and confirmed in *AEPCO 2011*, slip op. at 32-33. In *Xcel II*, slip op. at 13, the Board indicated that the peaking factor is to be determined by dividing the average number of train starts per day in the peak week by the average number of train starts per day in the peak year. Applying this procedure, the IRR locomotive peaking factor equals 19.1 percent. *See* e-workpaper "IRR Peaking Factor.xlsx"

iii. Railcars

Car ownership for the IRR's traffic group was determined from the shipment data produced by UP in discovery. This data shows that most of the IRR's coal and general freight traffic moves in shipper-provided equipment and that over 80 percent of its intermodal traffic moves in shipper-provided containers and trailers. Table III-C-3 below summarizes the ownership of railcars and intermodal units for each traffic type.

TABLE III-C-3 PERCENTAGE OF CAR OWNERSHIP BY TRAFFIC TYPE			
Traffic Type	**System**	**Foreign**	**Private**
Coal	35.6%	0.0%	64.4%
General Freight	25.6%	7.2%	67.1%
Containers & Trailers	17.4%	0.0%	82 6%
Intermodal Flats	100%	0.0%	0.0%
Multi-level Flats (Auto)	22.8%	70 0%	7.2%

The IRR system car requirements for all of the movements in its traffic group were developed from the Base Year traffic and the simulated transit-time output from the RTC Model The resulting IRR car requirements were increased by a 5.0 percent spare margin[8] and the same peaking factor used for

[8] The 5.0 percent spare margin is the same margin used by both parties (and accepted by the Board) in *AEPCO 2011*, which was based on a review of transportation contracts provided by UP and BNSF in discovery in that proceeding. *See* Opening Evidence of Complainant AEPCO, Narrative (Public Version) at III-C-15, *AEPCO 2011* (filed Jan. 25, 2010); Rebuttal Evidence of Complainant AEPCO, Narrative (Public Version) at III-C-16, *AEPCO 2011* (filed July 1, 2010) In addition, the 5.0 spare margin for shipper-provided cars was accepted by the Board in *WFA I*, slip op. at 39 and *Otter Tail*, slip op. at C-5. and was also based on the transportation contracts produced in discovery in those proceedings. The transportation contracts produced by UP in this proceeding do not specify spare margin requirements, and therefore cannot be used to demonstrate common industry practice. Accordingly, IPA is relying on public information of common industry practice concerning the railcar spare margin from other western coal rate cases as described above. UP accepted this approach and the 5.0 percent spare margin for IRR railcars in its Reply Evidence in Docket No. 42127. *See* e-workpaper "UP 42127 Part III.C.pdf" at III.C-18.

locomotives. A complete description of the development of car ownership costs for system, foreign and private cars is set forth in Part III-D-2 below

2. Cycle Times and Capacity

As the Board stated in *AEPCO 2011*, slip op. at 28:

> [A SARR's] operating plan must be able to meet the transportation needs of the traffic to be served, but it need not match the existing practices of the defendant railroads, as the objective of the SAC test is to determine what it would cost to provide the service with optimal efficiency. The assumptions used in the SAC analysis, including the operating plan, nonetheless must be realistic, i.e., consistent with the underlying realities of real-world transportation.

As a practical matter, a SARR's ability to "meet the transportation needs of the traffic to be served" means it "must be capable of providing, at a minimum, the level of service to which the shippers in the traffic group are accustomed." *Xcel I*, 7 S.T.B. at 598. This requires evidence that the SARR's train cycle or transit times are comparable to those of the defendant for the traffic in issue. In recent SAC cases, and in this one, such evidence consists of a simulation of the SARR's peak-period operations using the Board-approved RTC Model and a comparison of SARR train transit/cycle times with the corresponding real-world cycle or transit times during a comparable period of the most recent year for which actual train movement data are available.

The operating inputs to the RTC Model are key elements of a SARR operating plan. Relatively minor differences in the parties' RTC operating inputs recently caused the Board to accept a defendant railroad's version of the SARR operating plan rather than the complainant's version. *See AEPCO 2011*, slip op. at 28-30, where the Board accepted the defendants' operating plan in lieu of complainant's because of three differences in their respective plans (1) the defendants' operating plan modeled (using the RTC Model) the impacts of program maintenance whereas the complainant's did not; (2) the defendants' operating plan better modeled dwell times by using real-world data at the origins and destinations that would be served by the SARR, rather than assumptions drawn from the maximum free times in the relevant contracts and other pricing authorities; and (3) the complainant's operating plan failed to model any random outages on the replicated lines of one of the two defendant carriers involved.

IPA does not agree that such minor differences in operating inputs require the wholesale rejection of a complainant's SARR operating plan, but in any event, as IPA demonstrates below, IPA's operating plan does not suffer from any of the deficiencies identified by the Board in *AEPCO 2011*. The train dwell times at the IRR's local origins and destinations reflect real-world average dwell times The IRR does not need to perform any program maintenance during the late-winter period during which the peak traffic (and thus RTC simulation) period occurs in this case, and IPA has included all random outages affecting train operations that occurred on the lines being replicated during the Base Year equivalent of the RTC simulation period based on the outage data that UP provided in discovery. Thus none of the infirmities that caused the Board to reject the complainant's SARR operating plan in *AEPCO 2011* are present in this case, and the Board should accept IPA's operating plan for the IRR.

a. Procedure Used to Determine the <u>IRR's Configuration and Capacity</u>

The starting point for the IRR capacity analysis is the IRR's peak-year traffic volume and its peak train counts during the 10-year DCF period. These were developed by IPA Witness Daniel Fapp from UP train/car movement data produced in discovery for the traffic included in the IRR's traffic group for the Base Year (3Q11 through 2Q12), which is the most recent 12-month period for which usable train and car event data is available. In developing the peak traffic volume and train movements, Mr. Fapp also used the traffic forecast procedures described in Part III-A-2 above.

The IRR's system (track configuration and other facilities including yards), and its operating plan, were developed by IPA Witness Reistrup to accommodate the IRR's seven-day peak traffic volume and train frequencies. Mr. Reistrup is familiar with the rail lines in issue and, in fact, designed the track layout at IGS and at IPA's railcar maintenance facility at Springville, UT. To refresh his recollection and observe UP's current facilities and operations on the lines replicated by the IRR, in April of 2011 Mr. Reistrup conducted a three-day field trip in which he inspected most of these lines and facilities, including the Sharp coal loadout, the UP (and URC) trackage in the vicinity of the Coal Wye tracks at Provo, and the IPA facilities at Springville and IGS. He also observed

UP train operations over these lines including coal-train loading and unloading procedures.[9] In addition, Mr. Reistrup reviewed the UP operating timetables and track charts for the lines being replicated,[10] as well as maps of various facilities, and UP's interrogatory responses describing the operation of the IPA coal trains. He then developed a preliminary track configuration for the IRR, starting with UP's present main-track/passing siding configuration for the Sharp and Lynndyl Subdivisions, as well as the IRR's operating plan. Mr. Reistrup subsequently modified the IRR's trackage in the Provo area, as described below, to facilitate the interchange of coal and other trains between the IRR and UP and the interchange of coal trains between the IRR and URC.

The essential elements of the operating plan (described below), the main-track configuration, and the yard/interchange locations, as developed by Mr. Reistrup, were provided to IPA Witnesses Timothy Crowley and William Humphrey for input into the RTC Model. Messrs. Crowley and Humphrey also inputted various physical characteristics for the lines in issue, which were obtained from UP track charts, operating timetables and other information produced by UP in discovery. These included train speed restrictions at various locations, electronic curve and grade (topography) data, and turnout (switch) locations and

[9] Mr. Reistrup's notes on his field trip (which covered additional UP lines replicated by the SARR in Docket No. 42127 that are not part of the IRR as configured for this case) are reproduced in Part III-C e-workpaper "Reistrup field trip.pdf."

[10] The UP operating timetables and track charts for all of the lines involved are reproduced in Part III-B e-workpaper folder "III-B-1\Track Miles."

types. The final steps were to populate the RTC Model with the IRR's trains during the simulation period, which includes the peak volume week in the IRR's 10-year DCF existence, and input random outage events.

b. Development of Peak-Period Trains

The IRR's trains moving during the peak-seven day period in the IRR's 10-year DCF life are based on the UP trains carrying traffic in the IRR's traffic group that moved during the peak week of the Base Year. The peak week was developed based on the peak volume of trains selected for inclusion in the IRR's traffic group. The peak week train list was developed from UP train and car movement data provided in discovery for the Base Year.

Specifically, Mr. Fapp and his staff determined the number of IRR trains that would transport the coal, intermodal and general freight traffic included in the IRR's traffic group in 2022, which is the peak volume year during the DCF period They did this by applying the percentage increase in the IRR's traffic from the Base Year to 2022 ("Peak Year Growth Factor") for each movement in the Base Year train data provided by UP in discovery to determine the number of additional trains required to move the additional traffic. For coal unit trains, the Peak Year Growth Factor was applied to the Base Year number of unit coal trains by origin/destination pair to identify the number of additional unit train movements required to meet the peak year volumes. For non-coal traffic, the Peak Year Growth Factor was applied to the number of railcars/units on the individual trains operating over the IRR during the Base Year If the number of railcars/units exceeded the largest Base Year train operated for that train type after application of the Peak Year Growth Factor, then an additional train was added. If after applying the Peak Year Growth Factor the number of railcars/units was smaller than the largest trains currently operated by UP for that train type, then the peak year train was assumed to operate at this larger train size. This approach is consistent with real world rail operations, which seek to maximize available capacity before adding additional trains to minimize cost associated with those trains.[11] The coal and non-coal "growth" trains thus developed were added to the trains that moved during the Base Year.

The results of this procedure established that the IRR's peak traffic week in the peak year is March 7 to March 13, 2022. *See* e-workpaper "Peak Period Identification.xlsx."

Based on the probable transit and train cycle times for a railroad the size of the IRR, Mr Fapp and his staff also developed the IRR's peak-period trains operating over its lines during a one-day warm-up period (used to populate the RTC Model with trains) and a one-day cool-down period, in addition to the peak week.[12] The study period used in the RTC simulation thus covers a total of 9 days,

[11] *See* the Association of American Railroad's "Railroad Facts" – 2011 Edition at page 35, which shows an 11.5 percent increase in average cars per freight train for the western railroads between 2001 and 2011. This indicates the western railroads, including UP, are increasing train sizes where possible to increase productivity and maximize capacity.

[12] One-day warm-up and cool-down periods were selected because, on the basis of UP's train movement records, it was apparent that the maximum time any train would normally spend on the IRR would be less than one full day.

from March 6 through March 14, 2022. A total of 208 trains were dispatched during this period, of which 166 were dispatched in the peak week and completed their runs by the end of the simulation period. These trains include 23 loaded coal trains, 31 empty coal trains, 122 non-coal trains with no switching, and 32 non-coal trains from which cars were switched in or out en route by the IRR. The study period trains are shown in e-workpaper "RTC List.xlsx."

After populating the RTC Model with the study period trains Messrs. Crowley and Humphrey ran the trains through the Model using the track/yard configuration and operating-plan inputs developed by Mr Reistrup, as described in the next section below.

c. **Operating Inputs to the RTC Model**

The following elements of the IRR's revised operating plan for the IRR have been input into the RTC Model for purposes of simulating the IRR's peak-period operations and developing train transit times:

i Road locomotives – All trains have three ES44-AC locomotives, in a 2x1 DP configuration where applicable.[13] To the extent trains interchanged with UP have more than the horsepower-equivalent of three ES44-AC locomotives, the throttles on the extra locomotives are isolated in the idle position while operating on the IRR

ii. Train sizes and weight – The forecasted actual size and trailing weight for each UP train carrying traffic in the IRR traffic group in the Peak Year is used. Growth trains replicate trains that moved in

[13] The RTC Model does not include the ES44-AC among the locomotive types available. The most comparable model available in RTC is the GE AC4400, so IPA's experts modeled that type instead of the ES44-AC Since the ES44-AC is an advanced version of the AC4400, this approach produces conservative results in terms of locomotive efficiency

the Base Year. The maximum train size is 163 cars and the maximum number of locomotives per train is 10.

iii. Maximum train speeds – 70 mph for intermodal trains and 60 mph for all other trains in the CTC territory between Lynndyl and Milford; 49 mph for all trains operating between Provo and Lynndyl; and 40 mph on the IPP Industrial Lead.

iv. Dwell time allotted for coal trains at IGS – 4 25 hours.

v. Dwell time allotted for coal trains at the Sharp loadout – 6.0 hours.

vi. Dwell time allotted for grain trains at the Sharp grain loop – 19.0 hours.

vii. Dwell time at yards/interchange points – 30 minutes for interchange of trains that do not change consists at Provo, Lynndyl and Milford; 45 minutes for interchange of trains at Lynndyl that change consists there: 2 5 hours for interchange of trains at Milford that change consists there; and one hour and 15 minutes for interchanging loaded coal trains between URC and the IRR on the Coal Wye tracks at Provo.

viii. Dwell time for pickup or delivery of non-coal carloads at intermediate points – 30 minutes.

ix. Crew-change time at crew-change points other than yards and interchange points – 15 minutes. (Crew districts are discussed below)

x. Time for track inspections and maintenance windows – none.

xi. Time for random outages – time for four random outage events (with accompanying train movement instructions) was input into the RTC Model, as described in Subsection xi below.

These operating functions/inputs, and the times allotted for them, are explained in the following subsections.

i. **Road Locomotive Consists**

The locomotive consists and requirements for the IRR's trains are described in Part III-C-1-c-ii above The RTC simulation shows that all trains can operate on the IRR system with three ES44-AC locomotives, including trains received in interchange with a non-DP locomotive configuration.

Most of the IRR's non-coal trains operate on the IRR in overhead service.[14] In addition to the overhead trains, the IRR operates unit trains received in interchange from UP at Provo that terminate on the Sharp grain loop (owned by the Moroni Feed Company) near Sharp.

For purposes of the RTC simulation, each non-coal train is assumed to have a number of ES44-AC road locomotives sufficient to equal the total horsepower on the train when received at the IRR on-junction as shown in UP's Base Year train movement records. Locomotives that are not needed to move these trains over the IRR are isolated (essentially shut down so that they are not contributing power for movement of the train) while they are on the IRR system.

ii. **Train Size and Weight**

The forecast (2022) trains in the RTC Model simulation are based on the average and maximum Base Year trains described in Part III-C-1-c above. The maximum train size is 163 cars and the maximum number of active locomotives

[14] Some of the overhead trains operating between Milford and Lynndyl or Provo stop en route to pick up or drop off cars at points served by the IRR.

on any IRR train is three.[15] All growth trains (trains carrying additional tonnage that did not move in the Base Year) are limited to the size and weight for the corresponding Base Year trains, with the locomotive consists sized to provide the appropriate total horsepower based on the use of ES44-AC locomotives.

iii. Maximum Train Speeds

The maximum permissible train speeds input into the RTC Model are as follows:

1. On the Lynndyl Subdivision (CTC territory): 70 mph for intermodal trains and 60 mph for all other trains.
2. On the Sharp Subdivision: 49 mph for all trains.
3. On the IPP Industrial Lead: 40 mph

These maximum speeds are consistent with UP's operating timetables and real-world practice for lines being replicated and operated over by the IRR.

Maximum train speeds are reduced below those specified above where a speed restriction is required by UP's operating timetables, or when needed to operate through a turnout (for example, the IRR has #15 turnouts for the connections between the mainline and passing sidings; trains are limited to a maximum speed of 30 mph when using these turnouts). These restrictions exist for safety reasons (such as to maintain a safe braking distance), to reduce track

[15] For purposes of the RTC simulation, IRR trains are assumed to have the same number of locomotives as the corresponding Base Year trains as indicated by UP's train movement data, except that any train having five or more locomotives is assumed to have the number of ES44-AC road locomotives needed to provide the same total horsepower the Base Year train had since UP's train movement data does not reveal which specific locomotive type(s) were on the train.

wear in curves, to comply with FRA restrictions regarding the movement of hazardous materials, and to avoid high-speed gauge separation on curves exceeding three (3) degrees. In addition, trains do not reach maximum authorized speed in some areas due to curves or other operating restrictions, as shown in UP's operating timetables. All of these restrictions and limitations have been incorporated into the RTC Model for application to the IRR's peak-period operations.

iv. Dwell Time at IGS

The IRR directly serves and delivers coal trains to one power plant, IGS. The train dwell time allotted at IGS is 4.25 hours. This is the average dwell time at IGS for coal trains in the Base Year based on records maintained in the ordinary course of business by Intermountain Power Service Corporation ("IPSC"), an affiliate of IPA which staffs IGS and IPA's Springville railcar maintenance facility. *See* e-workpaper "IGS train time data.xlsx."

As explained by IPA Witness Van Stewart (IPSC's Transportation Coordinator at IGS), IPSC personnel interface with UP train crews in arranging the arrival, unloading and departure of coal trains at IGS. They keep track of the time spent by each coal train from the time the loaded train departs the UP main line and enters the IPP Industrial Lead to the time the empty train is released to UP. The dwell time at IGS is the interval between the lead locomotive's arrival at the plant gate and IPSC's notification to UP's crew that the train has been unloaded and is ready to depart from the plant. Exhibit III-C-1 contains a more detailed explanation of the "IGS train time data.xlsx" spreadsheet and how the train dwell time was calculated.

v. Dwell Time at the Sharp Coal Loadout

The IRR directly serves, and originates coal trains at, one Utah coal loadout: the Sharp loadout. Mr. Reistrup allotted 6.0 hours of train dwell time at the Sharp loadout, which is the median dwell time at this coal loadout in the Base Year from UP's train movement records produced in discovery. *See* e-workpaper "Sharp Coal Average Dwell Times.xlsx."[16]

vi. Dwell Time at the Sharp Grain Loop

The IRR also directly serves the Sharp grain loop and terminates loaded grain trains there (these trains originate on UP and are interchanged with UP at Provo in both the loaded and empty direction). Mr. Reistrup allotted 19.0 hours of train dwell time at the Sharp grain loop, which is based on the average dwell time at this location from UP's train movement records for the Base Year. *See* e-workpaper "Sharp Grain Average Dwell Times.xlsx."

vii. Dwell Times at Yards and Other Interchange Points

The IRR has two small yards at Lynndyl and Milford where trains are interchanged with UP. In addition, the IRR interchanges trains with UP at two

[16] The average train dwell time at the Sharp loadout in the Base Year was somewhat higher than 6.0 hours, but the average was skewed by a few trains (7.8 percent of the total, none of which moved during the RTC simulation period) whose loading time exceeded 11 hours

locations in Provo. The IRR also interchanges trains with the URC at two locations in Provo.

UP Interchanges. Mr. Reistrup has allotted 30 minutes of dwell time at each of the IRR's Lynndyl and Milford interchange yards for trains that do not change consists at Lynndyl and Milford. He has also allotted 30 minutes of dwell time for trains interchanged with UP at Provo (Ironton) that move to/from points east of Provo (this interchange occurs on the IRR's Coal Wye tracks). All that is required for the interchange of run-through trains at each of these UP interchange locations is a change of crews, a brake set/release and a roll-by inspection. The 30-minute time allotment for these simple interchanges was accepted by UP and BNSF in *AEPCO 2011*. *See* Joint Reply Evidence and Argument of Defendants BNSF and UP, Narrative (Public Version) at III.C-29-30, *AEPCO 2011* (filed May 7, 2010).

Some of the IRR's through (overhead) non-coal trains interchanged at Lynndyl and Milford change consists at one or both of those locations – that is, some trains contain cars that are destined to or from industries in the vicinity that are served by UP and that are not included in the IRR's traffic group. Since the IRR does not participate in the movement of these cars (and obtains no revenue from them), the cars are removed from and/or or added to the trains by UP prior to delivering the trains to the IRR.[17] Because the interchange of these trains occurs

[17] There is no need to provide additional compensation to UP for switching these cars into or out of the through trains at Milford or Lynndyl, for several

in the IRR's yard at Milford or Lynndyl, it is necessary to add dwell time for these trains to accommodate the addition and/or removal of the cars. Accordingly, Mr. Reistrup has allotted 45 minutes of total dwell time at Lynndyl for the trains that change consists there, and 2.5 hours of total dwell time at Milford for the trains that change consists there (considerably more cars are involved at Milford than at Lynndyl). There is no need to increase the size of either the Lynndyl or Milford yard to accommodate the additional dwell time as it does not result in any unresolved train conflicts in the RTC Model.

Trains destined to/from UP-served points north of Provo (*e.g.*, Salt Lake City) do not have any dwell time on the IRR at Provo. These trains are interchanged in UP's Provo Yard located on UP's Sharp Subdivision just north of Milepost 750.22, and move to/from that yard without stopping on the IRR's tracks A speed of 10 mph is assumed when the train enters or exits the IRR system at Milepost 750.22, as the actual interchange occurs in UP's nearby Provo Yard.

<u>URC Interchange – Loaded Coal Trains</u>. Consistent with UP's real-world practice, the URC and UP interchange loaded coal trains on the Coal Wye

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reasons. First, UP removes or adds the cars to these trains at Milford or Lynndyl in the real world, and thus is not performing any additional work because of the IRR's insertion into the route. Second, UP has a yard at Milford and a local wayfreight assignment based at Milford (which operates to/from Lynndyl among other stations), and thus has in place the facilities, personnel and equipment needed to add and remove cars to/from these trains. Finally, UP is compensated for this activity through the ATC revenue methodology because I&I switching costs are attributed to UP in the URCS Phase III program.

tracks at Provo,[18] which are part of the IRR system. In connection with the interchange process the URC removes its locomotives from the trains and the IRR places its own locomotives on the trains before departure toward IGS or the IRR/UP interchange at Milford.

In his operating plan for the SARR presented in IPA's opening evidence in Docket No. 42127, Mr. Reistrup allotted 45 minutes of interchange dwell time for these trains at Provo. However, for purposes of the present case, Mr. Reistrup has revised the track configuration in the Provo area to facilitate the interchanges with both the URC and UP, and has considered additional information that UP provided in its reply evidence in No. 42127 – namely, that URC operates these loaded coal trains with mid-train helpers that need to be removed from the train as part of the interchange process.

With respect to the track configuration at Provo, Mr. Reistrup has provided for an intermediate crossover between the two Coal Wye tracks at MP 1.19, which shortens the distances (and thus the time required) for all of the individual locomotive movements to and from the loaded coal trains received from the URC. Mr. Reistrup has also extended the southerly Coal Wye track (Wye #2) southwest to Sharp Subdivision Milepost 749.41 to provide additional capacity

[18] This interchange location is identified as "Ironton" in the RTC simulation period train list (Exhibit III-C-1)

and further facilitate the movement of URC and IRR locomotives and coal trains in this area.[19]

Mr Reistrup has analyzed each of the movements required to remove URC locomotives from and add IRR locomotives to loaded coal trains interchanged between the two carriers at Provo (Ironton), in light of the IRR configuration changes described above. The required movements, and the time allotment for each, are described in Exhibit III-C-2. The net result is that the total dwell time for loaded coal trains received in interchange from the URC is one hour and 15 minutes (*i e.*, 1 25 hours). Mr. Reistrup instructed IPA Witnesses Crowley and Humphrey to use this dwell time allotment for these trains in conducting the RTC Model simulation of the IRR's operations

<u>URC Interchange – Empty Coal Trains</u>. Empty IPA coal trains are interchanged with URC at IPA's Springville railcar maintenance facility, where they undergo inspection and bad-order/spare switching (as well as repairs) by IPA personnel. Other empty coal trains the IRR receives in interchange from UP at Milford and destined for loading at URC origins or UP-served Utah origins east of Provo also stop at the IPA car shop for inspection when necessary, as well as associated switching and repairs. This enables the IRR to enhance the efficiency of its operations by consolidating all locomotive fueling, inspection and maintenance at its N. Springville locomotive facility. A total of three hours of

[19] The revised configuration for the Sharp Subdivision trackage in the area of the Coal Wye tracks is shown on page 1 of Exhibit III-B-1.

dwell time has been allotted for inspection and locomotive fueling of the non-IPA empty coal trains at the IPA car shop.[20] After the inspection and associated switching have been completed, either the UP or URC (depending on which carrier handles the trains east of Provo) picks up the trains for movement to the origin loadout.

A maximum of five empty coal trains per day (including both IPA and non-IPA trains) move through IPA's Springville railcar maintenance facility during the IRR's peak traffic week. According to IPA Witness John Aguilar, who is a Civil Engineering Associate and IPA's coal transportation manager, the Springville railcar maintenance facility has the capacity to inspect and switch (for bad-order and spare railcars) five trains per day. Thus the facility can accommodate the IRR's empty coal trains. IPA currently inspects empty coal trains for third parties, including { }, and charges the IRR the same hourly fee that it charges other third parties for performing these services.

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[20] While the non-IPA coal trains are interchanged with the URC at the IPA's Springville railcar maintenance facility, there is no direct interchange of the IPA coal trains there. The inbound IRR crew brings the empty train to the IPA car shop and drops it off (and then moves the locomotives the short distance to the adjacent N. Springville locomotive facility). The empty cars are inspected and serviced by IPA personnel, with at least 12 IPA cars removed from each train and 12 different cars inserted A URC crew subsequently brings URC locomotives to the IPA car shop and picks up the new train (which has been assembled by IPA personnel) for movement to the coal origin via the Coal Wye tracks. These trains are treated as terminating and then originating at the car shop.

viii Dwell Time at Intermediate <u>Pickup and Setout Points</u>

The IRR's traffic group includes some non-coal interline forwarded and interline received traffic that it originates or terminates at a total of four locations in addition to the previously-discussed Sharp grain loop (Nephi, Martmar, Delta and Bloom). IPA has provided turnouts for the sidings serving the industries at these locations. The peak (RTC simulation) period trains that contain cars destined to or from these points, and the number of cars on each train that are switched (picked up or dropped off), are shown in the "Non-Coal Switching" train category in e-workpaper "RTC List.xlsx."

The IRR's trains carrying the cars to be picked up or set out at these locations perform the pickup or delivery service at each point. Given the small number of cars involved, and the fact that they are blocked by origin or destination, Mr. Reistrup has allotted 30 minutes of dwell time for the pickup or delivery operation at each location (except the Sharp grain loop, which was discussed earlier).

ix. <u>Crew-Change Locations/Times</u>

The IRR operates only road crews. The crew changes take place at Provo, the Sharp loadout, Lynndyl, Milford, and IGS. There is ample time to change crews during the performance of other functions at interchange locations other than Lynndyl and Milford.

The IRR calls train crews sufficiently in advance of a train's arrival at the designated crew-change point so that the crew can complete paperwork, receive any necessary job briefing, and be ready to board the train when it arrives and the incoming crew has de-trained. At IRR crew-change points where a change of crews is the only activity, 15 minutes have been allotted for this function This is consistent with the time allotted by the complainant and accepted by the defendants (and the Board) for SARR crew changes in *AEPCO 2011* *See* Joint Reply Evidence and Argument of Defendants BNSF and UP, Narrative (Public Version) at III C-29-30, *AEPCO 2011* (filed May 7, 2010). It is also consistent with UP's reply evidence in IPA's earlier rate case. *See* e-workpaper "UP 42127 Part III.C.pdf" at III.C-35.

The operating plan for the IRR provides for the following crew districts and assignments

1. Crews based at Provo (home terminal) operate in straightaway service to IGS or the UP interchange at Milford. These crews operate in straightaway service back to their home terminal after receiving their minimum rest under FRA rules, except that such a crew occasionally takes an empty coal train to the Sharp loadout and terminates its run there.

2. Crews based at Provo (home terminal) operate in turn service to the Sharp coal loadout and return to Provo. Alternatively, after delivering an empty coal train to the Sharp loadout, these crews can either (i) move an empty unit train from the Sharp grain loop to Provo, or (ii) deliver a loaded coal train from the Sharp loadout to IGS and then go off duty at Lynndyl, rather than returning directly to Provo.

3. Crews based at Lynndyl operate in turn service from IGS to the Sharp loadout and return to IGS with a loaded train.

4. Crews based at Milford operate in turn service from the Milford interchange with UP to the UP interchange at Lynndyl and return. If a shift expires while a crew is at Lynndyl (or en route from Lynndyl to Milford), the crew is taxied back to its Milford base.

The crew districts and assignments described above reflect the IRR's ability, as a start-up railroad, to operate in a manner that is not constrained by prior mergers and/or union work rules that limit a Class I railroad's ability to maximize the efficiency of its crew assignments This gives the IRR much more flexibility in scheduling crews and maximizing their use within the constraints of the federal "12-hour" (Hours of Service) law, as amended by the Rail Safety Improvement Act of 2008 ("RSIA"). The RTC simulation confirms that the distance for each crew assignment, as well as the allotted time at mines or other points served by turn crews, can generally be covered by a single tour of duty including an allowance of one hour for crew preparation/taxi time. To the extent a crew's tour of duty expires under the Hours of Service law, it is taxied to its next terminal and the cost of the taxi service is included in the IRR's annual operating expenses as described in Part III-D.

In UP's reply evidence in Docket No. 42127, UP argued that because it does not presently change crews at Lynndyl, the IRR's insertion into the route of trains that operate between the Salt Lake City area and Milford or points west, with an interchange at Lynndyl, means that UP will have to add a new crew base and related facilities/personnel at Lynndyl and that the IRR should bear the additional costs incurred by UP as a result.[21] However, the replacement of part of the residual incumbent's facilities and operations by a SARR does not impact the incumbent's remaining operations and costs – any more than it impacts the incumbent's facilities that are replicated by the SARR but that continue to handle traffic that is not included in the SARR's traffic group, and thus that continue to exist in a sort of "parallel universe." The Board has never required that costs of this kind be reimbursed by a SARR except where they result from an external reroute.[22] Moreover, all costs incurred by the IRR as a result of the interchange at Lynndyl (including crew and associated costs) are included in its operating expenses as described in Part III-D below.

x. <u>**Track Inspections and Maintenance Windows**</u>

Consistent with the SARR operating plans accepted by the Board in several previous cases (*e.g., WFA I* and *AEP Texas*), no time has been allocated for scheduled track inspections or maintenance windows for purposes of the RTC simulation.

FRA rules require twice-weekly inspections for Class 4 track, which is the classification for the IRR's main tracks As described in Part III-D-4 (which addresses maintenance-of-way costs), the IRR's main lines are inspected twice a week by the railroad's Assistant Roadmasters using hi-rail vehicles (pickup-type

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[21] *See* e-workpapers "UP 42127 Part III C.pdf" at III.C-1-2 and "UP 42127 Part III D.pdf" at III.D-90-91.

[22] *See, e g., Tex Mun Power Agency v Burlington N. & Santa Fe Ry*, 7 S.T.B 803, 818 (2004); *Duke/NS*, 7 S.T.B. at 112-115.

vehicles equipped with retractable flanged wheels so they can operate either on highways or on railroad tracks). These inspections of course have to be performed during the peak traffic (RTC simulation) period. However, they can be performed between train movements, and if necessary the hi-rail vehicle can follow a train on the same block with the dispatcher's approval. Accordingly, there is no need to allot separate time for FRA-prescribed track inspections in the RTC Model.

No program maintenance will be performed during the IRR's peak traffic period Data produced by UP in discovery indicates that UP performed no program (capital) maintenance on the lines replicated by the IRR during the 2012 equivalent of the RTC simulation period. and no slow orders (which can be indicative of maintenance activity) were in effect on these lines during this period. Moreover, the RTC simulation period occurs during the winter (early March), when no program maintenance would normally be scheduled.[23] Program maintenance will be performed during other, less-busy periods when the weather is also better Since the IRR is being designed and configured for its peak traffic week, there is ample time for normal track maintenance during non-peak periods, and track/facility repairs of an emergency nature are accounted for in the time allotted for random outages (described below). Thus there is no need to provide for separate track maintenance windows during the RTC simulation period.

[23] These facts distinguish this situation from the one involved in *AEPCO 2011*, where program maintenance was performed on the lines replicated by the SARR during the RTC simulation period. *Id.*, slip op. at 28-29.

xi. Time for Random Outages

Random events that affect track, signals and equipment (operations) could be expected to occur occasionally during the IRR's peak traffic period used for the RTC simulation (although not with the frequency that they occur on the replicated UP lines since the IRR starts operations in late 2012 with brand-new track, facilities and equipment, including rolling stock).

There is, of course, no way to know what events affecting train operations will occur during the 2022 RTC simulation period. However, IPA requested information from UP in discovery on events of an unexpected or "random" nature that affected train operations on the lines being replicated by the IRR in 2011 and 2012, including train-related, track-related and signal-related events. The outage information provided by UP indicated that a total of four random outages occurred on those lines during the period in 2012 comparable to the 2022 RTC simulation period (March 6 to 14).[24]

The four outages included {

[24] These outages, as reproduced from the 2011-12 outage spreadsheet that UP provided in discovery, are shown in e-workpaper " IPA Random Outages 3-6-12 - 3-14-12.pdf." The time of occurrence, location, nature and duration of each outage are shown in the workpaper.

}[25] Mr

Reistrup conservatively instructed Messrs. Crowley and Humphrey to include this outage (as well as the other three) in the RTC simulation and to assume that all four outages were "full stop" outages – that is, that the IRR trains affected by each outage had to stop during the period shown for each event in the UP outage data.

d. Results of the RTC Model Simulation

After inputting the IRR's track and other relevant facilities, peak-period trains and operating parameters (including the random outages described above) into the RTC Model, the model was run to a successful conclusion.

The key outputs generated by the RTC Model were elapsed train running times over the IRR's line segments, and train cycle and transit times (used to develop locomotive and car hours and train-crew counts) over the portion of the IRR system used by each train during the peak seven days of the nine-day period

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[25] A "Form B" event is one that involves track or signal conditions. {

} This resulted in the need for two relief crews – the only IRR relief crews needed during the RTC simulation period.

modeled by Messrs. Crowley and Humphrey. A schematic diagram of the IRR's tracks as they appear in the RTC Model is attached as Exhibit III-C-4. The electronic files containing the RTC Model runs, output and case files are included in IPA's Part III-C e-workpaper folder "RTC."[26]

The RTC Model simulation demonstrates that the IRR's system configuration and operating plan are feasible, and that the IRR's operations in the peak period of the peak year meet its customers' requirements. Specifically, the average train transit times produced by the RTC simulation (including dwell time at the interchange yards, where appropriate) have been compared with UP's average train transit times (including dwell times) for the IRR's principal traffic flows during the Base Year period equivalent to the IRR's peak week (March 7 through 13, 2012), based on train movement data produced in discovery. The UP and IRR transit-time comparisons for the IRR's principal coal and non-coal traffic flows are shown in Exhibit III-C-4. Further details on a train-by-train basis are shown in e-workpapers "UP Peak Period Coal Times and Comparison Summary (Final).xlsx," "IRR RTC Times (Final).xlsx," and ""UP Peak Transportation Times (Final).xlsx"

[26] The Board is a licensee of the RTC Model, so the computer software is not being provided to the Board by IPA. Messrs Crowley and Humphrey used Version RTC 2 70 L64K of the Model for the simulation of the IRR's peak-period operations presented in e-workpaper folder "RTC."

Exhibit III-C-4 shows that, with one minor exception,[27] the IRR's 2022 peak-week train transit times (and cycle times where available) for train movements over the various IRR line segments are equivalent to or faster than the real-world UP cycle times for the comparable trains moved during the 2012 peak week. This includes the premium intermodal or "Z" trains that the IRR operates in bridge service between Milford and Lynndyl. This is a higher standard than that used by railroads in the real world.[28] In any event, the transit-time comparisons demonstrate that the IRR can provide service commensurate with its customers' requirements.

3. Other

a. Rerouted Traffic

The IRR's traffic group does not include any traffic that has been re-routed from its real-world route of movement

[27] Exhibit III-C-4 shows a slightly longer cycle time for the IRR's unit grain train terminating on the Sharp grain loop than for the comparable real-world unit grain train operated by UP during the peak week of 2012. However, this comparison is not meaningful as it is based on a single observation (only one grain train operated during the IRR's and UP's peak week).

[28] The Board has recognized that a railroad is not required to "build a church for Easter Sunday" by providing capacity and personnel (*i e* , train crews) to handle its peak traffic volume (*Xcel I*, 7 S T.B at 645). and no real-world railroad does this. Thus, there should be no need to model the peak week in a SARR's entire 10-year DCF existence. as opposed to the average weekly trains during the peak traffic year or the Base Year. However, to be conservative, and avoid the need for time-consuming multiple RTC simulations for different years during the DCF period, IPA's experts have modeled only the peak week of the peak year and compared the resulting average transit times with real-world average transit times during the equivalent peak week of the Base Year.

b. **Fueling of Locomotives**

The IRR re-fuels the road locomotives on coal trains that pass through Provo in the eastbound direction, as needed.[29] DTL fueling is performed by a contractor. The locomotives on eastbound coal trains operating to destinations east of Provo reached via UP's Provo Subdivision (including coal trains interchanged to the URC) are DTL-fueled either at the IPA car repair facility or at the IRR's N. Springville locomotive facility if the locomotives are removed from the train at the car shop.

The only IRR trains that do not pass through Provo are (1) coal trains that originate at Sharp and move to the UP interchange at Milford,[30] and (2) non-coal trains moving in overhead service between Lynndyl and Milford. The road locomotives on these trains are fueled while on UP, at locations such as Salt Lake City or Barstow, CA, and do not need to be fueled while on the IRR.

c. **Car Inspections**

As described above, the IRR does not need to conduct 1,000-mile or 1,500-mile inspections of any trains while on its tracks. Trains interchanged with UP at Provo are inspected while on UP and do not require inspection while on the

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[29] The locomotives on these trains do not need to be fueled in the westbound direction. Each IPA coal train can make several round trips between refuelings. Westbound coal trains (and all non-coal trains) are re-fueled while on the residual UP.

[30] The IPA coal trains that originate at the Sharp loadout also operate to/from Provo. These trains are fueled at Provo as they can make several round-trips between locomotive fuelings.

IRR. The same is true of non-coal overhead trains that move between Milford and Lynndyl. Empty coal trains moving via the Sharp Subdivision to the Sharp loadout are inspected at IPA's Springville railcar repair facility, by IPA personnel.[31] IPA charges the IRR for performing this service.

d. Train Control and Communications

i. CTC/Communications System

The facilities reflected in the IRR's operating plan include a CTC system covering the main line between Lynndyl and Milford. The CTC system includes remotely controlled power switches for all main-track crossovers, between single main tracks and passing sidings, and between main tracks and yard/interchange track leads, with appropriately-spaced wayside signals. Trains can operate in either direction on any track covered by the CTC system, which provides maximum flexibility and capacity. The Sharp Subdivision main line between Provo and Lynndyl is "dark" although the mainline switches in this territory are remotely controlled by the locomotive engineers.

All IRR train operations are controlled by a centralized dispatcher located in the IRR's headquarters building at Lynndyl This includes the Sharp Subdivision and the IRR-owned portion of the IPP Industrial Lead, which do not

[31] As noted earlier, the IPA coal trains are able to make several round trips between inspections. The maximum distance such trains travel on the IRR in each direction is less than 97 miles (the distance between the URC interchange at Provo and IGS).

have CTC. The centralized dispatcher controls train operations on the dark portions of the railroad by means of radio communications and track warrants

Communications among the dispatcher, train crews, track inspectors and supervisory field personnel are conducted using radios connected to the IRR's fiber optic/microwave system (described in Part III-F-6 below). The fiber optic/microwave system is also linked with the CTC system. Each train crew, track inspector and field operating and maintenance-of-way supervisor also has a company-issued wireless (cell) phone for emergencies.

The Failed-Equipment Detectors, or FEDs, installed at appropriate intervals along the tracks as shown in Exhibit III-B-1, broadcast a local radio signal to the crew on the affected train. If a set-out is required, the train crew uses one of the double-ended setout tracks which are located as described in Part III-B-1-c-iii above and in Exhibit III-B-1.

ii. <u>Dispatching of Trains</u>

The IRR's dispatchers are based at its Lynndyl headquarters. The IRR requires only one dispatching district or "desk" given its short length (175 route miles) and low traffic volume compared to other SARRs that move large volumes of Powder River Basin coal traffic. The dispatching desk is manned by one dispatcher three shifts per day, seven days per week. This desk is responsible for dispatching trains, inspection vehicles and work equipment on the IRR system.

A single dispatching position will have no problem handling the IRR's train movements. The entire IRR system is shorter than many crew districts on Class I railroads, and the IRR's operations are highly repetitive. The IRR moves only complete trains with very little intermediate switching (pickups or set outs), no local or wayfreight trains, and no passenger or commuter trains. It also uses modern, computer-aided train control technology and communications, which greatly facilitate the work of the dispatcher.

iii. PTC Implementation Under RSIA

Under the Rail Safety and Improvement Act of 2008, commonly known as RSIA, Class I rail carriers are directed to equip trains that operate over lines that carry regularly scheduled intercity or commuter rail passenger trains and certain hazardous materials (as defined in DOT regulations) with positive train control ("PTC") systems by December 31, 2015.[32] This is about one-third of the way through the 10-year DCF period for this case. However, the IRR is a Class II railroad based on its annual revenue, and it does not carry any intercity passenger or commuter trains. Accordingly, although the IRR's traffic group includes some commodities that would otherwise require a PTC system, the IRR does not need to equip itself for PTC compliance.

[32] The December 31, 2015 compliance deadline may be postponed; *see* e-workpaper "PTC Extension.pdf" which includes the Federal Railroad Administration's August 2012 Report to Congress on Positive Train Control Implementation Status, Issues and Impacts. However, in the absence of definitive information on whether a postponement will occur (Congressional approval is required), IPA has assumed for present purposes that the current PTC compliance deadline will stand.

Nevertheless, the IRR's road locomotives will operate in run-through service over UP lines that carry passenger trains and hazardous materials, and thus are subject to PTC requirements. It is likely that an IRR locomotive will occasionally be the lead locomotive on such trains while on UP lines Thus the IRR's road locomotives must have PTC interoperability with UP's locomotives when they are on UP lines, which means they must be equipped with onboard PTC apparatus that is compatible with the PTC apparatus on UP road locomotives. *See* 49 C.F.R. § 236.1006(b)(4). IPA has provided for this, as described in Part III-D-1-a below

e. **Miscellaneous Aspects of the Operating Plan**

Other elements of the IRR operating plan are described in Part III-D below. These include locomotive maintenance facilities and procedures (including those for locomotive inspections), and operating personnel requirements The IRR's operating personnel include Train & Engine ("T&E") crews and non-train operating personnel involved in management, field supervision and mechanical functions. As described in Part III-D-4, the IRR's maintenance-of-way plan has been carefully coordinated with its operating plan and is fully consistent with the operating plan.

III-D Operating
Expenses

III. D. OPERATING EXPENSES

This section describes the IRR's annual operating expenses for equipment, personnel, information technology, maintenance-of-way, taxes and loss and damage, together with the development of the related service units and costs. The expert witnesses responsible for the evidence in this Part include Paul Reistrup (Operating and General & Administrative personnel and equipment), Joseph Kruzich (IT requirements and costs), Philip Burris (locomotive and freight car requirements, personnel compensation, equipment lease rates and operating unit costs, taxes, loss and damage costs and insurance costs), and Gene Davis (maintenance-of-way plan, including personnel, equipment and costs).

IPA Witnesses Timothy Crowley and William Humphrey developed train transit/cycle times from the RTC Model simulation of the IRR's operations, which is described in Part III-C-2 above. The RTC Model output was directly used to calculate the IRR's locomotive hours and car hours for the first full calendar year of IRR operations (2013) using the methodology accepted by the Board in *WFA I*, slip op. at 33-34.[1] Operating statistics including locomotive

[1] In the *WFA* case both parties and the Board accepted calculation of these same operating statistics for all trains in the peak traffic year and indexed the resulting statistics to traffic levels for the first year in the DCF model through use of a tonnage index. Subsequent to the *WFA* decision, the complainant in the *Seminole* case (*Seminole Elec. Coop., Inc. v CSX Transp Inc.*, NOR 42110 (Complaint filed Oct. 3, 2006), and the defendants in *AEPCO 2011* deviated from calculating operating statistics for peak-year traffic, and instead calculated these statistics for all trains moving in the Base Year and then indexed the resulting statistics to the first year in the DCF model. IPA adopted this same approach in its

hours, locomotive unit miles. railcar hours, railcar miles and crew starts were calculated for all trains moving in the Base Year.[2] The locomotive and car statistics were then indexed to the first year in the DCF analysis (November 2, 1012 through November 1, 2013) based on the ratio of first-year tons divided by Base-Year tons, calculated separately for coal, general freight and intermodal traffic. The resulting statistics were utilized to determine overall locomotive requirements and car ownership requirements, as shown in e-workpapers "IRR Operating Statistics.xls" and "IRR Car Costs.xlsx."

The actual locomotive and car hours and associated expenses derived from transit/cycle times for any year would be lower than those presented here because the average number of daily trains containing IRR traffic moved during each year from 2013 forward is smaller than the daily trains moved by the IRR during the peak one-week period of the peak year, which occurs in 2022. Thus the IRR's transit/cycle times should be faster on a daily average basis for the entire year than as compared to the peak week.

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opening evidence in Docket No. 42127 (*see* e-workpaper "IPA 42127 III-D.pdf" at III-D-1, 2), and UP concurred with its use (*see* e-workpaper "UP 42127 Part III.D.pdf" at III.D-88). IPA is using the same approach in this case, and has calculated operating statistics for the Base Year rather than the peak year. IPA otherwise used the methodology accepted in *WFA I* to develop the operating statistics from the RTC outputs.

[2] Development of the IRR's locomotive miles, car miles, locomotive hours and car hours is shown in e-workpaper "IRR Base Year Trains.xlsx." Development of T&E crew requirements is shown in e-workpaper "IRR Crews Hotels Taxis xlsx."

The IRR's annual operating expenses for its first full calendar year of operations (2013) are shown in Table III-D-1 below.

TABLE III-D-1 IRR 2013 OPERATING EXPENSES ($ Millions)	
Locomotive Lease	$ 1.51
Locomotive Maintenance	$ 0.99
Locomotive Operations	$15.12
Railcar Lease	$ 5.09
Materials & Supply Operating	$ 0.22
Train & Engine Personnel	$ 3.03
Operating Managers	$ 2.98
General & Administrative	$ 7 36
Loss & Damage	$ 0 06
Ad Valorem Tax	$ 0.93
Maintenance-of-Way	$ 4 95
Insurance	$ 1 64
Startup and Training	$ 1.70
Total	**$45.58***
* Total may differ slightly from the sum of the individual items due to rounding.	

The sources of the numbers in Table III-D-1 are e-workpapers "2013 Operating Costs.xlsx" and "IRR Operating Expense.xls."

1. <u>Locomotives</u>

The IRR's locomotive requirements are summarized in Part III-C-1 above. The IRR uses a single locomotive type: GE ES44-AC road locomotives (the IRR does not need any locomotives dedicated to yard switching). The IRR needs a total of 14 ES44-AC locomotives to transport its trains moving in the first full year of operations, including spares.

a. **Leasing**

The IRR leases all of its ES44-AC locomotives. To determine the costs associated with these locomotives, IPA's experts used an annual lease cost of \${ }[3] based on a UP lease for ES44-AC locomotives dated { }, produced by UP in discovery.[4] Application of these annual lease amounts results in a total locomotive lease expense of \${ } for the first full year of operations (2013).

As explained in Part III-C-1-c-ii, *supra*, IPA's experts used a locomotive spare margin of { } percent, based on UP's actual experience as shown in materials it produced in discovery in Docket No. 42127. IPA's experts also applied a peaking factor of { } percent. The peaking factor was calculated using the same approach approved by the Board in *WFA I*, slip op at 33-34 and *AEPCO 2011*, slip op. at 32-33. In particular, the peaking factor is equal to the trains moving in the March 7 to 13, 2022 peak week divided by the average number of trains moving per week in 2022.

b. **Maintenance**

The IRR's locomotives are inspected and maintained at N. Springville, UT, where the IRR has provided a locomotive maintenance facility to

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[3] Unit costs are shown herein at 4Q12 levels.

[4] *See* e-workpapers "Lease Payments-ES44AC.xls." This includes a cost of \${ } for equipping each road locomotive with Positive Train Control ("PTC") apparatus, which was developed from information provided by UP in discovery in Docket No. 42127 in spreadsheet "PTC.xlsx," tabs "cost model" and "locomotive."

be used by its locomotive maintenance contractor.[5] Locomotives requiring inspection or maintenance used for interline coal and other movements with UP are exchanged with power on the trains at Provo as necessary to enable them to cycle through the locomotive shop. Locomotives on trains that do not operate through Provo (*i.e.*, the trains operated overhead between Lynndyl and Milford) are inspected and maintained on the residual UP.

With regard to locomotive inspections, the FRA recently changed its locomotive inspection rules to provide for inspection intervals of 184 days, rather than 92 days, "for all locomotives equipped with microprocessor-based control systems with self-diagnostic capabilities."[6] The new ES44-AC locomotives being leased by the IRR have such systems and capabilities, and therefore require inspection at 184-day intervals rather than the 92-day inspection intervals required prior to June 8, 2012.

An annual maintenance cost of ${ } per locomotive (at the 4Q12 level) is used for the IRR's ES44-AC locomotives. This amount is based on a Locomotive Maintenance Services Agreement between UP and {

}. The locomotive maintenance cost for ES44-AC locomotives for

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[5] This facility is shown on page 1 of Exhibit III-B-2. It is described in more detail in Part III-F-7, *infra*

[6] *See* Locomotive Safety Standards, 77 Fed. Reg. 21,312 (Apr. 9, 2012)Federal Register/Vol. 77, No 68 (April 9, 2012) (copy included as e-workpaper "Loco Inspections.pdf"). The new rules became effective on June 8, 2012.

the first five years of the DCF model are based on {

} For the remaining five years of the DCF Model, maintenance for ES44-AC locomotives acquired at the start-up of the model are based on { }

In addition to normal locomotive maintenance costs, the IRR incurs periodic overhaul costs for its locomotives. For ES44-AC locomotives the costs are incurred every six years[7] and are annualized to equal ${ } per locomotive (4Q12).[8]

The total locomotive maintenance cost for the IRR equals $989.222 in the first full year of operations.[9]

c/d. <u>Servicing (Fuel, Sand and Lubrication)</u>

A contractor fuels, sands and lubricates locomotives as required at the IRR's N. Springville locomotive maintenance facility. Locomotives are removed from empty coal trains on the Coal Wye tracks at Provo or the nearby IPA car repair facility as necessary for fueling, servicing and inspection at separate

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[7] The typical overhaul period is one overhaul every eight years. However, as the IRR has a relatively high average utilization for locomotives of 12,638 miles per year, the average overhaul period has conservatively been shortened to one overhaul every six years.

[8] *See* e-workpaper "IRR Loco Overhaul.xls."

[9] *See* e-workpapers "IRR Operating Expense.xls" and "III-D-1 Locomotive Cost pdf."

facilities provided for this purpose.[10] Freshly fueled and serviced locomotives are placed on the corresponding loaded trains on the Coal Wye tracks or the IPA car shop for movement to IGS or the Milford interchange with UP. Locomotive fueling is performed using tanker trucks (commonly known as direct-to-locomotive or "DTL" fueling).

The locomotives on the overhead trains moving between Lynndyl and Milford do not require fueling while on the IRR and are fueled by UP. The IRR fuel cost is based on the average price per gallon UP paid for fuel at Provo, UT for the period January 2011 through June 2012[11] of ${ } per gallon, indexed to a 4Q12 level of ${ } per gallon. The 4Q12 price per gallon is based on the change in UP's overall actual fuel price This is the same indexing methodology used by UP in its November 10, 2011 reply evidence in Docket No. 42127 (*see* e-workpaper "UP 42127 III.D.pdf" at III.D-10). Other IRR locomotive servicing costs (primarily sand and lubrication) are based on a cost of ${ } per diesel unit-mile calculated using UP's 2011 R-1 and information provided by UP in discovery in Bates document IPA2-000004750 (reproduced in e-workpaper "2011 & 2012 Lube Oil costs.xlsx"), with the cost indexed to 4Q12 *See* e-workpaper "Loco Servicing Cost.xls."

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[10] All IRR locomotives are removed from the train in the case of empty coal trains interchanged with URC at the IPA car repair facility near Provo.

[11] UP provided only summary data for this 18-month period, and did not provide monthly data.

i. **Fuel Cost**

As stated above, the IRR's fuel price per gallon is based on the actual price per gallon paid by UP at Provo for the period January 2011 through June 12, indexed to 4Q12. The fuel price paid at Provo was provided by UP in discovery in Bates document IPA2-000001140 (reproduced in e-workpaper "III-D-1 Locomotive Cost.pdf). The cost used in IPA's analysis includes the price of fuel, transportation and DTL service as shown in the UP discovery document.

ii. **Fuel Consumption**

The average fuel consumption for the IRR's road locomotives is based on UP's average fuel consumption for trains moving over the lines replicated by the IRR. For a train to be included in the fuel consumption calculation, at least 75 percent of the locomotives must be ES44-AC locomotives (the locomotive type used by the IRR). The average fuel consumption for trains meeting this criterion for the period January 2010 through August 2012 equals { } gallons per locomotive unit mile. *See* e-workpaper "IRR Fuel Consumption.xlsx."

This methodology used for calculating average fuel consumption for the IRR is the same methodology relied on by UP in its reply evidence in Docket No. 42127 (*see* UP Reply Narrative at III.D-11 to 13) with three exceptions. First, UP included trains with 50 percent or more of the consist comprised of ES44-AC locomotives IPA increased the percentage to 75 because the ES44-AC is the predominant type of locomotive used by the IRR. Second, UP included all trains moving in Utah, rather than limiting the trains to those moving on the lines replicated by the IRR, as IPA has. Third, UP relied on 2010 fuel consumption data; IPA has added the fuel consumption data provided by UP in discovery in this proceeding (*i.e.*, for the period January 2011 through August 2012 which is the most current data available).

2. <u>Railcars</u>

a. <u>Leasing</u>

The IRR uses a mixture of IRR-provided cars, foreign cars and private cars. For IRR-provided coal cars, IPA's experts developed lease costs on the basis of full service leases. The full service lease cost per car for IRR-provided equipped (rotary) gondolas and steel hoppers equals ${ } per year and ${ } per year, respectively, as of 4Q12. The lease cost for equipped gondolas and hopper cars is based on recent UP lease agreements provided by UP in discovery.[12]

Car costs for non-coal traffic moving in railcars owned by foreign railroads are based on time and mileage by car type developed from UP's 2011 R-1. For non-coal traffic moving in UP equipment, annual full service lease costs were developed for each car type from information provided by UP in discovery or from publicly available sources[13] A weighted annual car cost for each car type was then developed based on the percentage each car type moves on the IRR

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[12] *See* e-workpapers "III-D-2 Car Costs.pdf" and "IRR Car Costs.xlsx"

[13] *Id.*

system. The weighted average annual car cost was then converted to a cost per hour and cost per mile and applied to the car hours and car miles for the 2011 Base Year trains.

The cars provided by the IRR for non-coal traffic include boxcars, covered hoppers, gondolas, open-top hoppers and flat cars. The annual full service lease cost per car for each car type is as follows:

Boxcars	$5.150
Equipped Boxcar	${ }
Gondolas	$5.236
Covered Hoppers	${ }
Open-top Hoppers	${ }
Flat Cars	$5.082

The lease costs for each car type is based on either current UP lease agreements provided by UP in discovery, or the most recent Railway Age Guide to Equipment Leasing in which the specific car type is found, with all lease costs indexed to 4Q12 using the AAR Equipment Rents-West Region. *See* e-workpaper "IRR Car Costs.xls"

The IRR's freight car requirements include a spare margin of 5.0 percent This is the same spare margin used by both parties in *AEPCO* and was based on a review of UP and BNSF transportation contracts provided in discovery in that proceeding. *See* Opening Evidence of Complainant AEPCO, Narrative (Public Version) at III-C-15, *AEPCO 2011* (filed Jan. 25, 2010); Rebuttal Evidence of Complainant AEPCO, Narrative (Public Version) at III-C-16, *AEPCO 2011* (filed July 1, 2010). In addition, the 5.0 percent spare margin for shipper-provided cars was accepted by the Board in *WFA I*, slip op. at 39 and *Otter Tail*, slip op. at C-5, and was also based on evidence of the transportation contracts provided in discovery in those proceedings. The transportation contracts provided by UP in this proceeding do not specify spare margin requirements and therefore cannot be used to demonstrate common industry practice. As a result IPA is relying on public information of common industry practice on the railcar spare margin as shown in public testimony and STB decisions.

b. <u>Maintenance</u>

As discussed above, the IRR uses full service car leases for the railcars it provides. As the full service lease payments include maintenance costs, no other maintenance costs are included.

Shippers who supply railcars for their coal movements make their own separate arrangements for maintenance of their cars, either at destination power plants or at existing contract-repair facilities on or near the route of movement.

The IRR needs a total of two End-of-Train Devices ("EOTD"), primarily for work trains. The IRR's revenue trains do not need EOTDs because they have DP locomotives on the rear. Details concerning EOTD expenses are shown in e-workpaper "IRR Materials and Supplies.xls."

c. <u>Private Car Allowances</u>

For IRR coal movements that occur in private cars, the cars are provided per diem and mileage-free under the terms of the relevant UP transportation contracts and pricing authorities. That is, the cars are provided free of charge to UP and the freight rate reflects the fact that UP/URC are not incurring car costs.

Because UP does not pay private car allowances for coal movements in private cars, and because the IRR is replacing UP with respect to its coal traffic, the IRR also pays no mileage allowances with respect to coal movements in private cars.

With respect to private cars used for non-coal traffic, IPA's experts have included a private car charge per car-mile by car type, which is applied to all private car-miles on the IRR. The private car mileage charge by car type was developed from data contained in UP's 2011 R-1. *See* e-workpaper "IRR Car Costs.xls."

3. <u>Personnel</u>

The IRR is a small SARR, particularly compared to most SARRs that handle Powder River Basin coal traffic. It is a non-unionized Class II rail carrier only 175 route-miles in length, and thus does not need the kind or level of staffing typical of a unionized Class I railroad such as UP (or even large SARRs that handle primarily Powder River Basin coal traffic).

a. <u>Operating</u>

i. <u>Staffing Requirements</u>

The IRR's operating personnel include train crews as well as other operating employees, including the senior management staff based at the railroad's

Lynndyl headquarters and line supervisory and other field employees in the Transportation and Engineering/Mechanical departments. The staffing plan for these operating personnel was developed by IPA Witness Paul Reistrup, who has substantial experience in senior management and operations at several railroads and is a recognized expert in the field of railroad operations.

(a) <u>Train Crew Personnel</u>

The IRR requires a total of 30 T&E crew members to transport its first-year trains. This count is based on the number of trains moving over the various parts of the IRR system during the Base Year (indexed to reflect first-year traffic levels), and the crew districts/assignments developed by Mr. Reistrup, as described in Part III-C-2-c. *supra* (The IRR does not need any switch crews). The RTC simulation was used to confirm that almost all train crews operating in these crew districts can complete each tour of duty within 12 hours, as required by federal law. Development of the IRR's first-year crew requirements based on Mr. Reistrup's crew districts and yard crew assignments, and on traffic levels, was performed by Mr. Burris. Details on the development of the IRR's T&E personnel are provided in e-workpaper "IRR Crews Hotel Taxis xlsx."

Consistent with Board precedent, T&E crews were developed using the total number of crew starts as determined by the actual train counts over the entire Base Year. *See Xcel I*, 7 S.T.B. at 644-45. In *Xcel I*, the Board determined crew requirements based on all trains moving in the peak year rather than extrapolating peak-week crew requirements to a full year of traffic: the peak-year crew requirements were then indexed back to traffic volumes in the first year of the DCF model. Here, crew requirements are determined following the *Xcel I* precedent, *i e* , using all trains moving in the year rather than extrapolating peak-week crew requirements to a year's traffic volume. The only difference is that the crew requirements are determined for all trains moving in the Base Year and indexed to traffic volumes in the first year of the DCF model, rather than for all trains moving in the peak year and indexed to traffic volumes in the first year of the DCF model. As stated previously, this methodology is the same as that followed by the complainant in *Seminole* and the defendants in *AEPCO 2011*, and used by both IPA in UP in Docket No. 42127.

Review of the results of the RTC Model simulation indicates that the crews on only two of the 208 total trains operating during the nine-day simulation period needed to be relieved due to exceeding the maximum permissible time on duty under the hours-of-service law. The total number of crew starts from each relevant crew base was adjusted upward to reflect re-crewing. The crew start count was used to determine the total number of T&E crews required using the standard formula employed by the Board to determine how many crews are required to cover the number of crew starts assuming that each crew member is available 270 days per year. *Xcel I*, 7 S T.B. at 644-45.

(b) <u>Non-Train Operating Personnel</u>

The IRR's staffing requirements for operating personnel other than train crews and maintenance-of-way ("MOW") personnel are summarized in

Table III-D-2 below. MOW personnel and compensation are discussed separately in Part III-D-4.

TABLE III-D-2 IRR NON-TRAIN OPERATING PERSONNEL	
Position	**No. of Employees**
Vice President – Operations*	1
Director of Operations Control	1
Managers of Train Operations	3
Manager of Locomotive Operations	1
Crew Callers	5
Dispatchers	5
Manager of Operating Rules, Safety & Training	1
Customer Service Managers*	2
Chief Engineer	1
Manager of Mechanical Operations	1
Total	**21**

This staffing level reflects the staffing level proposed by Mr. Reistrup on behalf of the complainants in *WFA I*, and accepted by the Board in that case (*id*. slip op. at 42), with reductions where warranted due to the IRR's considerably smaller traffic density and lack of yard switching activity as compared with the SARR in *WFA I* Mr. Reistrup has also moved several positions that he included in the General & Administrative ("G&A") personnel for the *WFA I* SARR to the IRR's operating personnel for consistency with the approach used by the Board in *WFA I*. These positions are denoted by an asterisk in Table III-D-2. A description of each operating position shown in this table is provided below.

(i) Headquarters Transportation <u>Management</u>

The IRR's Operating Department is headed by the Vice President-Operations. The Vice President-Operations is responsible for the railroad's transportation, customer service, marketing, engineering and mechanical functions.[14] The Director of Operations Control, who reports to this Vice President, supervises all train operations and the IRR's field operating managers (described in the next sub-section). He also supervises the IRR's Crew Callers and Dispatchers.

The IRR's crew-calling system is automated. It is augmented by one Crew Caller position that is on duty 24/7/365 (thus requiring five employees). The Crew Caller is also available to answer questions that cannot be dealt with by an automated system.

The IRR has one train dispatching district or "desk," with one Dispatcher position manned by five employees on a 24/7/365 basis. A single desk is sufficient given that the IRR system has only 175 route-miles long (and thus is shorter than many UP mainline road crew districts) and that the maximum number of trains dispatched on the IRR system in any day during the peak week of the 10-year DCF Model period is only 28. *See* the RTC diagnostic outputs from

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[14] The IRR has a total of four senior executives – the President and three Vice Presidents including the Vice President-Operations. These executives share a pool of two Administrative Assistants who are included in the G&A personnel described in the next section.

e-workpaper "IPA Open Final.zip" (the maximum number of trains dispatched on any given day occurs on Thursday, March 28, 2022).

The Manager of Operating Rules, Safety & Training also reports to the Vice President-Operations. This individual interfaces with the FRA in matters pertaining to rules and operating practice, and is responsible for the IRR's operating timetable, operating rules, and related instructions. A single position is warranted to supervise the rules, safety and training function because of the IRR's limited geographic scope, relatively low traffic density compared with the SARRs in other recent coal rate cases, and the small total number of employees.

The IRR's Customer Service Managers are included within the operations/transportation function, consistent with the approach followed by the Board in the *WFA* case. The IRR requires two Customer Service Managers (as well as a Marketing Manager who is included with the IRR's G&A staff). The IRR has no need for a larger staff of customer service personnel because of the size and nature of its traffic group. Customer Service Managers monitor train locations, maintain contact with customers at the IRR's local origins, and answer customers' questions concerning the locations of specific trains on the IRR system. The IRR serves only one location (the Sharp loadout) where coal traffic is originated and only one location (IGS) where coal traffic is terminated, as well as four locations where relatively small volumes of interline non-coal traffic are originated or terminated. It also handles a maximum of only 28 trains per day, most of which are non-coal overhead trains that are originated and terminated by UP with the maximum haul on the IRR being 89 miles.

Given these facts, the IRR does not need 24/7 coverage of the customer service function. Most customer service inquiries, particularly for non-coal traffic, will be directed to UP rather than the IRR. Almost all customer calls to the IRR will occur during normal business hours, which is when the IRR's two customer service managers are on duty.[15] To the extent the IRR receives customer service calls (including possible calls from UP) at other times, the calls can be taken by the dispatcher on duty who will not be very busy given the IRR's limited train activity (an average of just over one train per hour on the peak day). The Dispatcher can call on the Manager of Train Operations on duty for further assistance with customer or UP inquiries as needed.

(ii) <u>Field Transportation Management</u>

The IRR needs one Manager of Train Operations ("MTO") and one Manager of Locomotive Operations ("MLO") These positions, which report to the Director-Operations Control, are the equivalent of the Trainmaster and Road Foreman of Engines positions on a Class I railroad

The MTO is stationed at the IRR's Lynndyl headquarters. This is a 24/7 position with 12-hour shifts; thus a total of three employees are needed to staff the position. The MTO is responsible for managing train operations and for

[15] One will be on duty from 6 AM to 3 PM, and the other will be on duty from 10 AM to 6 PM.

supervising train crews. The MTO also performs FRA-mandated and other appropriate testing, and responds to and investigates accidents and day-to-day operational issues. One position is sufficient since the IRR's total route mileage (175) is smaller than many Class I railroad subdivisions.

The MLO is responsible for the safe and efficient handling of locomotives and trains by the IRR's locomotive engineers. He is an FRA-certified locomotive engineer and qualified on all of the IRR's route miles. He performs FRA-mandated testing and observation of engineers in train handling, efficiency testing, and other assistance as needed. A single individual can easily cover 175 route miles given the relatively low frequency of train operations (particularly east of Lynndyl) and the fact that he does not have to cover each crew district every day.

The IRR does not have any yards where classification switching or 1,000/1,500-mile car inspections are performed. Thus it does not need any yard supervisory employees or equipment inspectors. Nor does the IRR need any crew haulers, for the reasons set forth in *WFA I*, slip op. at 42.

(iii) Engineering and Mechanical <u>Management</u>

The IRR's small size and traffic volumes mean that it does not need a separate vice president to oversee the engineering and mechanical functions – such top-heavy staffing is more typical of Class I railroads. Instead, the IRR has a

Chief Engineer and a Manager of Mechanical Operations based at its Lynndyl headquarters. These individuals report to the Vice President-Operations

The Chief Engineer oversees the IRR's engineering function, including, in particular, maintenance-of-way and structures, and supervises the in-house MOW staff. He or she is also responsible for contract maintenance and for general oversight of contractor performance. The Manager of Mechanical Operations oversees the IRR's mechanical function (including budgeting), and interfaces with the locomotive and car maintenance contractors.

ii. Operating Personnel Compensation

The salaries and benefits for the IRR operating personnel described above are based on comparable and competitive compensation packages presently available in the railroad industry. Specifically, the annual salaries for the non-train operating personnel (other than the Vice President-Operations) are based on data contained in UP's 2011 Wage Form A&B Reports provided in discovery.

The salary for the Vice President-Operations of $249,000 is based on the average salaries paid to senior executives employed by the Providence and Worcester Railroad Company ("P&W"), a publicly held regional railroad, as shown in its April 25, 2012 Proxy Statement to Shareholders.[16] The P&W operates 518 route miles in the northeastern United States and the salaries paid to

[16] This calculation includes salaries and bonuses paid to senior executives (excluding the Chairman/CEO) employed by P&W for the entire year 2011.

P&W executives are far more in line with what executives at the smaller, Class II IRR would earn than are the salaries paid by UP to its executives.

The salary for the IRR's conductors ($64,748) is equal to the average wage paid to railroad conductors earning the top 10 percent of wages in the State of Utah in 2011 as reported by Salary.com. *See* e-workpaper "III-D-3 Salaries.pdf." The salary for the IRR's locomotive engineers is calculated by increasing the wage for conductors reported above by the percentage difference in the wages for engineers and conductors on the UP in 2011 as reported in UP's Wage Forms A&B.

The fringe benefit ratio for all IRR employees of 41.3 percent is based on the average fringe benefit ratio for all Class I railroad employees in the United States in 2010 as reported by the AAR (2010 is the most current year reported on the AAR's website for this information). *See* e-workpaper "III-D-3 Salaries.pdf." Fringe benefits for all Class I railroad employees in the U.S. were used as the ARR no longer reports the fringe benefit paid to railroad employees on a state-by-state basis.

b. **<u>General and Administrative</u>**

i. **<u>Introduction</u>**

The IRR's general and administrative ("G&A") personnel and equipment needs were developed primarily by IPA Witness Reistrup, who has held various executive and senior management positions at Class I and other railroads (including the Presidencies of Amtrak and the former Monongahela

Railway, a coal-hauling railroad in the Eastern United States that is roughly comparable in size and traffic volume to the IRR).[17] The G&A staffing and equipment for the information technology function were developed by IPA Witness Joseph Kruzich. Employee compensation and equipment costs (other than for computers and related equipment) were developed by IPA Witness Philip Burris.

In developing the G&A staffing for the IRR in the instant proceeding, Mr. Reistrup drew upon two principal sources: his executive and managerial experience in the railroad industry, and his experience in developing G&A staffing levels in other SAC rate cases, including in particular the *WFA* case, in which the G&A staffing level he developed for the complainant's SARR and proposed to the Board was largely accepted for a SARR that had much higher route miles, traffic density, and revenues. Unlike the IRR, the SARR in *WFA* was a Class I railroad.

For the Board's convenience, Mr. Reistrup has structured the IRR's G&A staff along the lines of the G&A staff for the SARR in *WFA* – although he notes that this departmentalized structure is more typical of a Class I railroad, and

[17] IPA's maintenance-of-way witness, Mr. Gene Davis, developed the IRR's engineering staff (reporting to the Chief Engineer) and equipment needs.

that other organizational approaches, with fewer personnel and a flattened or "de-layered" approach, would more likely be used by a start-up regional railroad.[18]

The G&A staffing level developed by Mr. Reistrup (assisted by Mr. Kruzich) for the IRR consists of a total of 26 persons, excluding the Vice President-Operations and the Customer Service Managers who – consistent with the Board's treatment in *WFA* – are categorized as non-train operating personnel rather than G&A personnel. As described in more detail below, the functions performed by the IRR's 26 G&A personnel are similar to the functions for the SARR G&A personnel described by Mr. Reistrup in the complainants' opening evidence in *WFA*, albeit on a reduced scale given the substantial disparity in the scale of the railroads' operations.

In comparing the IRR's staffing needs with those of the SARR in the *WFA* case, Mr Reistrup first notes that the IRR's route miles (174.96) and track miles (213 08) are lower than the route miles and track miles of either the *WFA I* SARR (218 route miles and 446.75 track miles) or the *WFA II* SARR (304 route miles and 443.55 track miles).

[18] From 1988 to 1992, Mr. Reistrup headed the Monongahela Railroad ("MGA"), which was a regional (two-state) coal-hauling railroad. The MGA had a general office staff consisting of four persons – the President (Mr. Reistrup) who also served as personnel director, a Manager of Marketing, a Treasurer who also served as revenue accountant, and a chief of police. The MGA's non-train operating personnel consisted of four people, a Senior Trainmaster, a Road Foreman of Engines, an Engineering Officer who was in charge of maintenance-of-way, and a Bridge Engineer. The MGA was comparable in size to the IRR, with annual traffic volume of about 30 million tons.

The IRR's route miles and track miles likewise are lower than IPA had proposed in Docket No. 42127. In that case, IPA proposed a SARR with 278.67 route miles and 329.77 track miles. The present SARR's route miles and track miles are 62.8% and 64.6%, respectively, of the levels IPA had proposed in Docket No. 42127.

Most importantly, the IRR has considerably lower traffic volumes and density than either the *WFA I* SARR or the *WFA II* SARR. The *WFA I* SARR carried 219.1 million tons in its peak year, and the *WFA II* SARR carried 68.3 million tons in its peak year. The IRR carries only 25.9 million tons in its peak year, a small fraction of the *WFA* levels. Although the IRR carries intermodal and general freight traffic in addition to coal traffic, most of the non-coal traffic moves in overhead service only 89 miles on the IRR system, with a few cars carried on through trains that are originated or terminated at local industries. With respect to coal traffic, both the *WFA* SARRs and the IRR serve a single power plant destination, and thus move only one customer's coal in local service. However, the *WFA* SARRs both serve a total of 16 coal origins, whereas the IRR serves only one coal origin (the Sharp loadout)[19] and serves only two interchange points where it receives coal traffic originated by other carriers (Provo and Lynndyl, UT – the IRR interchanges coal trains with both UP and URC at Provo). The *WFA* SARRs

[19] The IRR also serves a few origins/destinations for non-coal traffic which is interlined with UP.

move much more coal traffic for a much larger number of customers to considerably more destinations than does the IRR.

Finally, the IRR's total annual revenues do not exceed $155.0 million in any year during the 10-year DCF Model period. This is less than 42 percent of the *WFA II* SARR's highest total annual revenues ($372.7 million; *see* *WFA II*, slip op. at 34), and the IRR is a Class II rail carrier rather than a Class I carrier. This simplifies the IRR's treasury and financial reporting requirements.

For all of these reasons, the G&A staffing level for the IRR should be smaller than the G&A staffing level approved by the Board for the *WFA I* and *WFA II* SARRs. In this regard, in several recent SAC rate cases, the defendant railroads have purported to "benchmark" the SARR's G&A staffing against supposed "peer groups," including small Class I railroads such as the Kansas City Southern Railway ("KCS") or short-line holding companies such as (pre-merger) RailAmerica or Genesee & Wyoming Inc. Mr. Reistrup submits that those companies have far more complex traffic patterns and operations than the IRR, and that the only remotely appropriate benchmarks (taking into account traffic and revenue differences) are the staffing level accepted by the Board in *WFA I* and *WFA II* or the MGA staffing level.

It is important to recognize that the G&A staffing for the IRR will not even remotely resemble the typical large office building-based staffing for a Class I railroad in which the railroad's executives rarely interact with non-executive members of the G&A staff. In that type of large corporate structure, the executives of the company often are housed on a separate floor from many of the company's middle managers and bottom-layer staff members, and may rarely, if ever, have any personal interaction with that staff. Conversely, the IRR's G&A staff easily could be housed on a single floor of an office building all within a matter of 50 to 100 feet of each other. The positions identified in IPA's G&A evidence will be filled by a President and employees who know each other well and will be accustomed to working together. The notion of introducing excessive middle management into that type of close working environment would be antithetical to good business practices.

Docket No 42127

Before describing the details of its G&A staffing evidence in the present case, IPA first presents a summary of the G&A evidence and disputes from Docket No. 42127, given the relative similarity of the two SARR systems.

In Docket No. 42127, the parties submitted evidence on the subject of G&A staffing and expense that resulted in a relatively narrow dispute. In particular, IPA proposed a G&A expense level of $7.08 million on opening and UP proposed a G&A expense level of $8.69 million on reply.[20] Accordingly, the dispute between the parties on G&A expense (*i.e.*, a difference of $1.61 million in 2011 operating expense) amounted to a difference of 22.7% over IPA's opening levels. This disparity is very narrow as compared with the G&A disparity in many

[20] *See* e-workpapers "IPA 42127 Part III-D.pdf" at III-D-3 and "UP 42127 Part III.D.pdf" at III.D-2.

prior SAC cases. *See, e g* , *AEPCO 2011*, slip op. at 55 (the railroads' G&A staffing proposal reflected a 242% increase over the complainant's proposal).

IPA argued on Opening that the G&A staffing for the SARR should be based upon the accepted staffing level of the SARR in *WFA I*, but that the staffing level for the IPA SARR should be slightly lower than in *WFA I* because of the IRR's lower track miles, traffic volumes, and densities. *See* e-workpaper "IPA 42127 III-D.pdf" at III-D-23-24. Specifically, IPA suggested that the staffing level for the IRR should be 24 (including three outside directors), rather than the 36 G&A employees accepted in *WFA I*.

In its Reply Evidence, UP concurred with IPA's argument that the *WFA I* decision set an appropriate benchmark for the case and that the SARR staffing levels should be *below* those accepted in *WFA I* *See* e-workpaper "UP 42127 Part III D pdf" at III D-20 ("UP agrees that *WFA I* is a reasonable benchmark and that *IRR's staffing should be lower* than that accepted in *WFA I* in some respects . . . .") (emphasis added). Nevertheless, UP argued that IPA had reduced the *WFA I* SARR's G&A staffing level by too wide a margin. Instead, UP claimed that a G&A staffing level of 31 individuals (not including outside directors) was required. *Id.* at III.D-21 ("UP's proposed G&A staff of 31 for IRR is five fewer than the 36 G&A staff the Board accepted in *WFA I*.").[21]

[21] The ten-employee overall difference in SARR staffing levels proposed by the parties in Docket No. 42127 reflected the following individual staffing differences: (a) one administrative assistant; (b) one marketing manager; (c) three

Notwithstanding the fact that the IRR in the instant proceeding is substantially smaller than the SARR from Docket No. 42127 (in terms of track miles, route miles, and total revenues), IPA has *increased* the G&A staffing for the IRR relative to the level it had proposed in Docket No 42127. Again following the *WFA I* case as a model, IPA's experts have proposed a G&A staffing level for the IRR of 23 employees (26 including three outside directors).

IPA and UP also disagreed upon the salaries to be paid to the G&A staff in Docket No. 42127. In particular, UP argued that the salaries for the SARR's President, Vice Presidents, and Treasurer each should be increased beyond the base salary figure from the compensation levels reflected in the 10-K report of the Providence & Worcester Railroad ("P&W"). *See* e-workpaper "UP 42127 Part III.D.pdf" at III.D-37-38. In the present case, IPA again relies upon base salary figures as being consistent with STB precedent. *See, e.g., WFA I*, slip op. at 48-49 (rejecting BNSF proposal to add stock options to executive compensation for the SARR); *AEP Texas*, slip op. at 59 (same).

The other significant dispute between IPA and UP in Docket No. 42127 related to the outsourcing budget for legal services for the IRR. As explained in greater detail below, IPA is utilizing a percent of revenue calculation to develop its outside legal budget for the IRR in the present case.

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revenue managers; (d) one accounts payable manager; (e) one Director of Financial Reporting, and (f) three IT specialists.

Mr. Reistrup turns now to the specifics of the IRR's G&A staffing needs for purposes of Docket No. 42136.

ii. Staffing Requirements

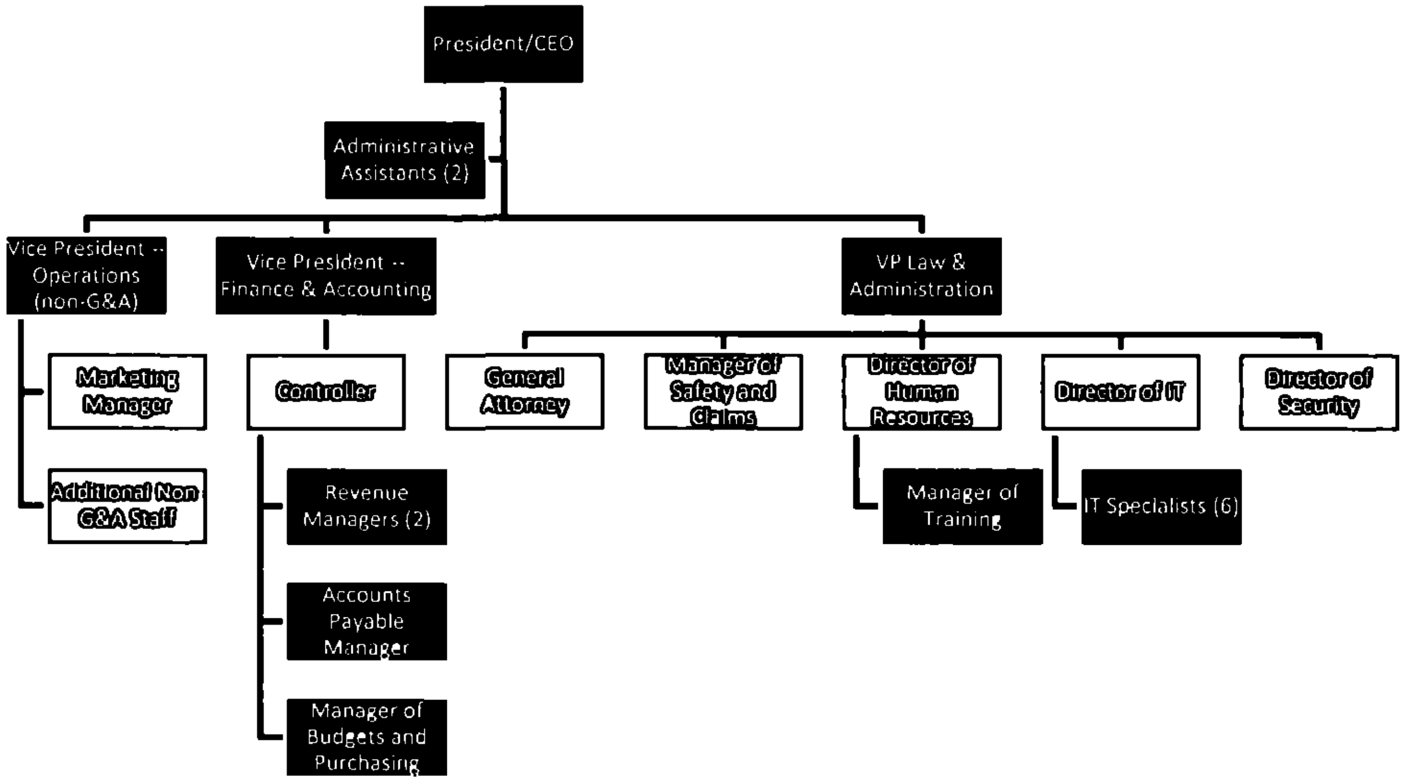
The IRR's G&A staff is based at its Lynndyl headquarters and is summarized in Table III-D-3 below. This table does not include the operating staff, which was described in the preceding section, or the MOW staff which is described in Part III-D-4.

TABLE III-D-3 IRR GENERAL & ADMINISTRATIVE STAFF	
Department/Position	**Employees**
Executive	
Outside Directors (non-employees)	3
President and CEO	1
Administrative Assistants	2
Marketing	
Marketing Manager (Reports to VP-Operations)	1
Finance and Accounting	
Vice President-Finance/Accounting & Treasurer	1
Controller	1
Revenue Managers	2
Accounts Payable Manager	1
Manager of Budgets and Purchasing	1
Law and Administration	
Vice President-Law & Administration	1
General Attorney	1
Manager of Safety and Claims	1
Director – Human Resources	1
Manager of Training	1
Director of Security	1
Director – Information Technology	1
IT Specialists	6
Total	**26**

The differences in G&A staffing as between Docket No. 42127 and Docket No. 42136 are as follows: (1) IPA has added two Revenue Managers; (2) IPA has added an Accounts Payable Manager; (3) IPA has added a Director of Security; (4) IPA has combined the positions of VP Finance & Accounting and Treasurer, consistent with the staffing in the *AEP Texas* case; and (5) IPA has removed the position of Assistant Controller. The net difference is to increase the staffing of the IRR by two individuals.

The following table sets forth the organizational chart for the IRR based upon IPA's proposed staffing level and structure:

Table III-D-4
Organizational Chart for the IRR G&A Staffing



(a) <u>Executive Department</u>

The IRR's Executive Department includes three employees: the IRR's President and two Administrative Assistants. It also includes the IRR's Board of Directors. This staffing is identical to what IPA proposed in Docket No. 42127. *See* e-workpaper "IPA 42127 Part III-D.pdf" at III-D-26-27.

The President also serves as the IRR's CEO, and the department heads (Vice Presidents, including the Vice President-Operations) report to him. The President also is responsible for the IRR's external relations (other than marketing of its transportation services), including community and government relations. Given the IRR's limited geographic scope within a single state and narrow operational focus, the President does not need a separate staff to assist him with these functions. Assistance can be provided as needed by the IRR's three Vice Presidents.

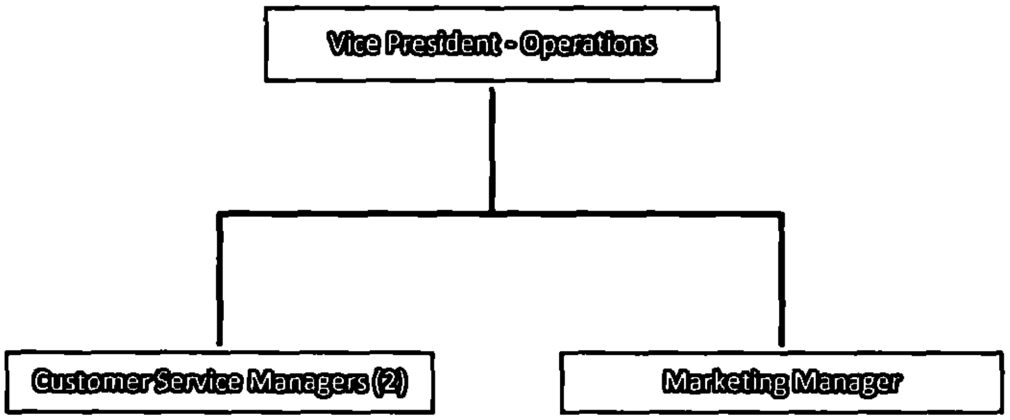
The Executive Department has a pool of two Administrative Assistants who are available to serve the administrative and secretarial needs of the President and the IRR's three Vice Presidents (the Vice President-Operations, the Vice President-Finance & Accounting, and the Vice President-Law & Administration).

The President is also a member of the IRR's Board of Directors, and serves as Chairman of the Board. Consistent with stand-alone theory, the IRR is not a publicly-owned company and therefore does not need a large board of directors with numerous outside directors. It can be governed by a five-person Board, consisting of the President, the Vice President-Operations, and three outside Directors. The outside directors would be chosen from amongst representatives of the IRR's customer group and its lenders. This would assure independent oversight of the IRR's affairs. Since the outside directors would have a direct and substantial interest in the IRR's affairs, they should be willing to serve on its board without compensation other than the reimbursement of expenses for attending board meetings. Accordingly, IPA has not provided any expenses for compensating the IRR's directors except for travel expenses to attend board meetings. UP agreed to this approach in its Reply Evidence in Docket No. 42127. *See* e-workpaper "UP 42127 Part III D.pdf" at III.D-24.

The IRR's Transportation and Marketing functions are headed by the Vice President-Operations, who reports directly to the President and who is included in the IRR's Operating personnel discussed above. The Operating personnel who report to this Vice President also were described earlier. The only G&A employee who reports to the Vice President-Operations is the Marketing Manager. The IRR requires only one employee who is specifically devoted to the marketing function.[22] The Marketing Manager interfaces with the IRR's customers and handles day-to-day marketing functions as well as contract renewals. One such Manager is sufficient given the IRR's small size and the limited nature of its traffic group.

[22] The IRR also has two Customer Service Managers, who also report to the VP-Operations and are included in the Operating personnel described earlier.

Table III-D-5
Staffing of the Customer Service/Marketing Function[23]



It should be noted that while the SARR traffic group in the *WFA* case consisted entirely of coal, the number of origins served, the volumes, and the number of customers involved were far larger than in this case.[24] Thus the level of in-house marketing effort required for the *WFA I* SARR (which was staffed with two Marketing Managers) was considerably greater than for the IRR.

In Docket No. 42127, UP argued that two Marketing Managers were needed for the IRR, with one responsible for coal and other bulk commodities and one responsible for intermodal and general manifest. *See* e-workpaper "UP 42127 Part III.D.pdf" at III.D-25-26 (arguing that the IRR would need as many

[23] The Vice President-Operations and the Customer Service Managers are not included within the G&A staffing. As described above in the section on Operating employees, other personnel not shown in the table report to the Vice President-Operations.

[24] The *WFA I* SARR carried about 219 million tons of coal in its peak year moving to several destinations. The IRR carries only 10 2 million tons of coal in its peak year.

Marketing Managers as the SARR in *WFA*). UP claimed that the two Marketing Managers were needed to conduct the following tasks: setting rates for new business, negotiating terms of contracts, preparing forecasts, coordinating with Revenue Managers, coordinating with mines, loadouts, and IPA on monthly shipping plans, and monitoring service metrics. *Id.* Given the reduced size of the IRR in the instant case, however, one Marketing Manager would be sufficient. The IRR will no longer interact with any mines or loadouts other than the Sharp loadout, and the workload therefore will be commensurately reduced

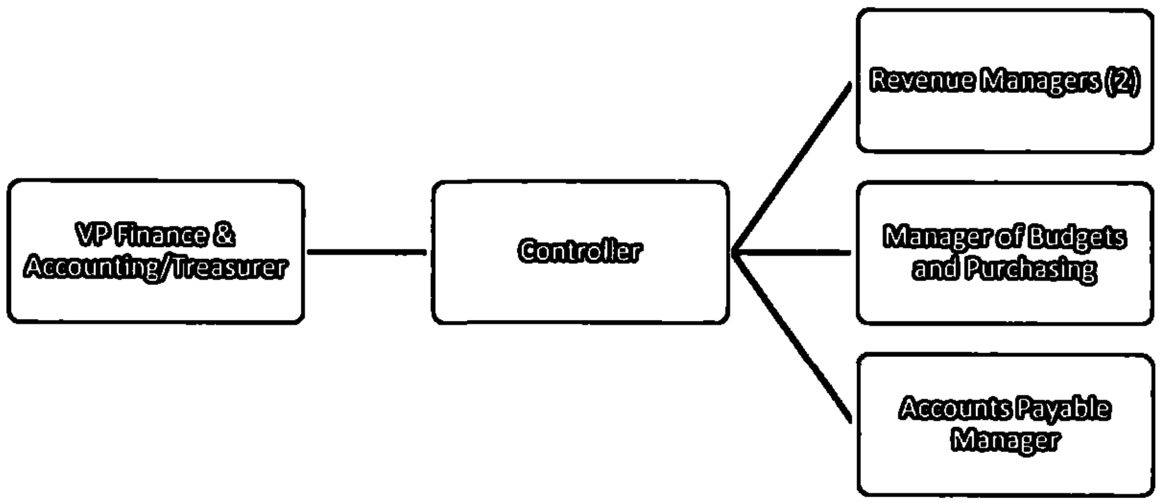
(b) <u>Finance and Accounting Department</u>

The IRR's Finance and Accounting Department consists of six employees, headed by the Vice President-Finance & Accounting. IPA included five employees in this department in its Opening Evidence in Docket No 42127 and UP proposed a total of ten employees in this department in its Reply Evidence. *See* e-workpapers "IPA 42127 Part III-D.pdf" at III-D-29 and "UP 42127 Part III D.pdf" at III.D-26-35. The level of staffing for this department proposed by IPA, and the positions involved, are appropriate given the small traffic volumes (and the small number of traffic flows) involved Again, the IRR's total revenues (and accounting and cash management needs) are much smaller than for any of the SARR's involved in recent coal rate cases (and smaller than for the SARR in Docket No. 42127). Although the IRR has a more diverse traffic group than the *WFA I* SARR, its non-coal traffic moves in a limited number of discrete flows and its total annual traffic volume and revenues are far less than those of the *WFA* SARRs.

Modified Staffing Approach

IPA has modified its staffing of the Finance & Accounting Department in order to address the arguments that UP raised on reply in Docket No. 42127 while at the same time eliminating excessive "middle management" and adopting a more flattened or "de-layered" approach to this function. Most notably, IPA has combined the roles of Vice President and Treasurer, and IPA has eliminated the Assistant Controller. In place of these two individuals, IPA has increased its staffing at the functional level (*i.e.*, two Revenue Managers and an Accounts Payable Manager):

Table III-D-6
Finance & Accounting Department Staffing



Given the small size of the IRR and its comparably low level of revenues, there is no need for both a Vice President and a separate Treasurer on the IRR staff. In the structure that IPA is proposing in the instant case, there will be fewer supervisors relative to the total number of employees in the department. Specifically, the department will include two supervisors and four staff members.

Vice President/Treasurer

As noted above, the IRR's Vice President-Finance & Accounting is responsible for serving as the IRR's Treasurer and for overseeing the other finance and accounting functions of the railroad. As a privately-held Class II railroad with limited revenues and accounting/financial reporting needs, the IRR does not need the large treasury and accounting staffs that are typical of Class I railroads. The Vice President/Treasurer is responsible for managing the IRR's cash flows and balances, its debt, its insurance, and its pension plan. *Cf.* e-workpaper "UP 42127 Part III.D.pdf" at III.D-26-27 (identifying responsibilities for the IRR's Treasurer). This individual will report directly to the President of the IRR and will be supported, as necessary, by the IRR's Controller, Revenue Managers, and Accounts Payable Manager.

The Board previously has accepted G&A staffing for SARRs in which a single individual served as both the Vice President of Finance & Accounting and the Treasurer of the SARR. *See AEP Texas*, slip op. at 51-52, 55 ("The parties agree on the need for a vice-president of finance and accounting, who would also serve as the TNR's treasurer and primary liaison with outside auditors. . . AEP Texas' evidence demonstrates that its smaller treasurer's staff is feasible . . ."); *TMPA*, 6 S.T.B. at 681-83 (declining BNSF's request to staff the SARR's Finance & Accounting Department with both a Vice President and a separate Treasurer); *see also* e-workpaper "UP 42127 Part III.D.pdf" at III.D-23 (agreeing that a single individual could perform the Treasury function for the IRR, and noting that the *WFA I* SARR included an Assistant Treasurer, but declining to propose that the IRR staff include such an individual).

Controller and Additional Staffing

As noted above, the support staff for the Vice President-Finance & Accounting will include a Controller, two Revenue Managers, an Accounts Payable Manager, and a Manager of Budgets and Purchasing. This support staff is sufficient for the IRR's needs given its small size and limited traffic group, and the availability of computerized accounting packages and programs available to assist in performing these functions.[25]

The IRR's Controller is responsible for all accounting functions, including direction of all billing, vendor payment processing, payroll, budgeting and auditing. The Controller and his or her staff oversee IPA's interline freight and related billing, accounts payable and payroll processing, and the tax function,

[25] These packages and programs are described in detail in the subsection below on the IRR's Information Technology Department.

As in the *WFA* case, the ICC does not need internal auditing or real estate staff. Mr Reistrup is unaware of any independent Class II railroad that has an internal auditor; this function is outsourced. Once the IRR is constructed there will be no need for additional real estate acquisitions or sales.

which is limited because the IRR has property in only one state In this regard, the IRR uses an outside accounting firm with property and payroll tax specialists to prepare all tax returns. The IRR is a privately-held Class II railroad with minimal financial reporting requirements (it does not need to prepare reports to the SEC or the equity-investment community), and that uses a financial accounting computer to track all of its physical assets and asset replacements.

In its Reply filing in Docket No. 42127, UP argued that the IRR's staff should include three Revenue Managers and an Accounts Payable Manager that had not been included in IPA's Opening Evidence. Specifically, UP claimed that these individuals were necessary to ensure that it obtains the revenue that it must have to support its operations. *See* e-workpaper "UP 42127 Part III.D.pdf" at III.D-27-28. UP added that there are four functions that the IRR must accomplish in order to obtain the revenue to which it is entitled: (1) creating freight bills for all traffic that the IRR originates, for all traffic it receives in Rule 11 service, and for all BNSF trackage rights service; (2) maintaining a rate database that includes rate authorities for all traffic UP will route via the IRR; (3) recording revenue divisions on any new moves; and (4) updating its revenue accounting system so that it can validate amounts it receives and monitor results from ISS to be certain that the IRR is receiving the amount to which it is entitled. *Id.* at III.D-28-29. UP's witness Brown proposed that three Revenue Managers would be needed to handle these functions for the IRR. *Id.* at III.D-31.

In the instant filing, IPA includes a staff of two Revenue Managers to handle these functions. As the result of IPA's decision to truncate the IRR in the present case (only extending to Provo rather than to the Utah coal origins located to the east of Provo), the IRR will originate even less traffic than in Docket No. 42127, the IRR will move less total traffic, and the IRR will not host any BNSF trackage rights traffic. Accordingly, the Revenue Manager function in this case will be less complicated than in Docket No. 42127.

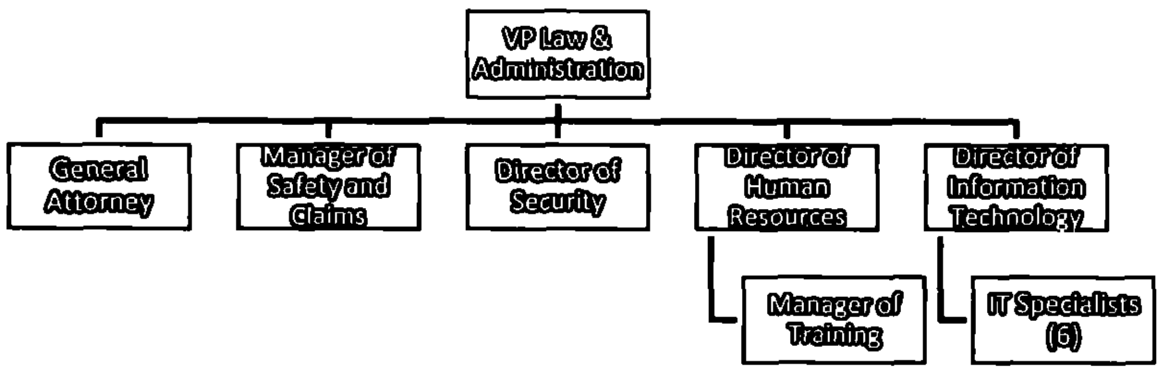
IPA also has included an Accounts Payable Manager in its staffing of the IRR in this case. UP had argued that this position was necessary in Docket No. 42127 in order to verify bills received from vendors, to handle the timekeeping and payroll functions, and to cover equipment accounting. *Id.* at III.D-32-34. Mr. Reistrup concurs.

Finally, the Finance & Accounting Department of the IRR will include a Manager of Budgets and Purchasing. This individual handles the preparation of the annual company budget, monitors monthly performance against plan, and prepares forecasts and cost and revenue analyses as required. Given the small size and Class II status of the IRR, one individual can easily handle both the budgeting and the purchasing function (as described in Part III-D-4 below, there is a separate individual in the Engineering/MOW department who is responsible for materials purchasing). *See* e-workpaper "UP 42127 Part III.D.pdf" at III.D-34 ("UP agrees that a single manager could adequately perform the Purchasing and Budgeting function of a railroad the size of IRR.").

(c) Law & Administration Department

The Law and Administration Department is responsible for the IRR's legal affairs, safety and claims administration, human resources and training, information technology, and security. It consists of 13 employees (including the IT staff), headed by the Vice President – Law & Administration. The IRR's Law and Administration department is organized along the same lines as those approved by the Board for the SARRs in the *WFA* case (*see WFA I*, slip op. at 45):

Table III-D-7
Staffing of Law & Administration Department



With the exception of the inclusion of the Director of Security, the staffing of this department is identical to the staffing that IPA proposed in Docket No. 42127 *See* e-workpaper "IPA 42127 Part III-D.pdf" at III-D-31-35. UP generally accepted IPA's proposed staffing of this department in Docket No. 42127 (*i.e.*, the Vice President, the General Attorney, the Manager of Safety and Claims, the Director of Human Resources, the Manager of Training, and the

Director of Information Technology), but UP claimed that three additional IT Specialists were required. *Id.* at III.D-35-37. Given the fact that the IRR in the present case is smaller and has lower revenues than the SARR in Docket No. 42127, this staffing is adequate for present purposes as well.

The Vice President – Law & Administration reports directly to the President of the IRR and functions as General Counsel for the IRR. As noted in Table III-D-7, the Vice President's direct reports include a General Attorney, a Manager of Safety and Claims, a Director of Security, the Director of Human Resources, and the Director of Information Technology.

Legal/Claims Function: The General Attorney supports the Vice President – Law & Administration with the IRR's in-house legal work and interacts with outside counsel. The IRR's outside counsel needs are not great, given that all of its facilities and operations are located in a single state, and given the IRR's level of internal legal staffing relative to its annual revenues. *See* Part III-D-3-b-v-(b) (explaining IPA's calculation of the IRR's outside counsel budget). The General Attorney is responsible for administering litigation and claims, environmental compliance, and contract matters. The department also is staffed by a Manager of Safety and Claims, who supervises the out-sourced risk and claims management contractor and provides assistance in investigating claims. This position is also responsible for government safety reporting and representing the IRR in industry associations and forums.

<u>Human Resources and Training Functions</u>. Human Resources is a function that lends itself well to out-sourcing. External resources exist in this field (as described in the section on IT systems below) that will support a small in-house human resources staff whose primary responsibility is to interface with the outside contractor and assure that the IRR has a pool of employees that enables it to engage in ongoing operations. Accordingly, an appropriate staffing level for the IRR's human resources function consists of a Director of Human Resources and a Manager of Training. This staff, which is the same as that approved by the Board in *WFA I*, is sufficient to manage training, recruiting, compliance, compensation and benefits, employee relations and training since most of these functions will be out-sourced.

<u>Information Technology Function</u>. The IRR's IT systems and associated personnel were developed by IPA witness Joseph Kruzich and reflect the size of the IRR's traffic group and revenues and its operating plan. Mr. Kruzich has considerable experience with the IT function at Class I and other railroads, including the Kansas City Southern. The IRR's IT systems (described in the next section) are administered by a staff consisting of a Director-Information technology and six IT Specialists. As discussed in more detail in the next section, the IRR does not have a main-frame environment, but rather a NT/PC-based system. This means far less effort is required than at a Class I railroad due to the relative simplicity of a NT/PC-based system Furthermore, approximately 90

percent of the IT computer requirements (train movement, revenue accounting, car accounting, *etc.*) are outsourced to RMI.

A staff of seven people (including the Director and six IT Specialists) is adequate to provide sufficient coverage with at least one person on duty during normal business hours seven days a week. In addition to the seven days a week coverage, each technician will be on call periodically for evening duty thereby providing 24/7 coverage. Seven IT personnel are more than sufficient to provide 24/7 coverage as the vast majority of computer users will not be in the office on weekends and evenings. The dispatching and crew calling systems are the key items that require support, and such support is easily provided on an on-call basis. Finally, since most of the IRR's application software is available from vendors, very little development and maintenance effort is required.

The primary IT staff function is to trouble-shoot various problems with vendors, coordinate the transportation software applications with the outside vendor (RMI) and the business users, and monitor the network infrastructure. There will also be occasions when enhancements will be required to the crew-calling, accounting, human resources and dispatchers systems. The IRR's staff of IT specialists will be active participants in this effort.

The Director oversees the IT department's daily activities, provides senior management with updates to new technology, and advises as to the future strategic direction for the department. This includes formulation of the logical and physical computer architecture plans and assessment of the cost and feasibility of all user requests.

The six IT Specialists perform the following specific functions, but each will be cross-trained to provide basic IT support when serving as the on-call technician:

- One Lead RMI Technician – responsible for all RMI applications (RMI is the IRR's principal software vendor/contractor, as described in the next section) and serves as a liaison to RMI and the user Departments. This person ensures that all the users' needs are met in an efficient and timely manner.

- One Help Desk PC Technician – takes incoming calls from the various users, assists with basic IT support for office applications, and reroutes the call to a Programmer Technician for immediate handling if an adjustment to a system is necessary. This position follows-up with the user to make sure the problem has been resolved. This assignment is during regular business hours During non-business hours, calls will be directly routed to the on-call technician. The on-call technician will remotely diagnose problems using remote access software (such as logmein) if necessary, or the on-call technician can come to headquarters in the event a problem cannot be diagnosed remotely.

- One Network/Exchange 2010 Engineer – responsible for overseeing network security matters and local area network (LAN) and wide area network (WAN) functionality. This individual oversees the messaging design and implementation of the Windows 2010 Exchange (server) environment. He/she is also responsible for planning, designing and managing transmission facilities and cabling and communications devices, and also handles any telecommunications issues that may occur. This person is also responsible for coordinating data backup and working with the programmers/developers to assure cross-platform data availability and integration.

- Two Programmers/Development – responsible for maintaining and upgrading the crew calling, accounting, human resources and dispatchers systems. These employees help manage the crew calling, dispatching and accounting systems, and they also are responsible for developing a corporate information website. The IRR's website will not be elaborate because its customer base is small. These programmers are also responsible for developing any necessary system integration between RMI, accounting, dispatching and other systems.

- One IT Security/Server Manager – responsible for defining the security model to protect against cyber-security vulnerabilities. protecting internal and external railroad data from malicious attack, as well as performing general server maintenance work This individual is also responsible for server infrastructure support to manage network needs and system infrastructure upgrades. This person is also responsible for managing the Microsoft SharePoint and SQL databases.

Security Function. The IRR's Law & Administration Department also includes a Director of Security (a position that was omitted from IPA's proposed G&A staffing in Docket No. 42127). This individual interacts with local police departments in the vicinity of the IRR's small system. In the *AEPCO 2011* decision, the Board approved the railroads' proposed staffing level of "1 officer for every state in which the SARR operates, with 1 chief responsible for oversight." *Id*, slip op. at 62. Based upon this standard, one Director of Security is sufficient for the IRR.

iii. Compensation

The salaries and benefits for the IRR's G&A personnel described above are based on comparable and competitive compensation packages currently available in the railroad industry (and in other service industries).

Specifically, annual salaries for the general and administrative personnel were estimated based on data contained in UP's Wage Form A&B

Reports provided in discovery. In addition, the salaries paid to the IRR's senior management, *i.e.*, the President and Vice Presidents, are based on the salaries and bonuses paid to officers in comparable positions at the P&W, which is a regional railroad that is more comparable to the IRR than any Class I railroad.

The G&A staff salaries are summarized in Table III-D-4 below.

TABLE III-D-8
IRR General & Administrative Staff Salaries

Position	**No. of Employees**	**Annual Salary**	**Total Salaries**
President and CEO	1	$479,668	$479,668
Administrative Assistants	2	${ }	${ }
Marketing Manager	1	${ }	${ }
Vice President – Finance & Accounting	1	$172,719	$172,719
Controller	1	${ }	${ }
Revenue Managers	2	${ }	${ }
Manager of Budgets/Purchasing	1	${ }	${ }
Accounts Payable Manager	1	${ }	${ }
Vice President-Law & Administration	1	$172,719	$172,719
General Attorney	1	${ }	${ }
Managers of Safety and Claims	1	${ }	${ }
Director – Human Resources	1	${ }	${ }
Manager of Training	1	${ }	${ }
Director of Security	1	${ }	${ }
Director – Information Technology	1	${ }	${ }
IT Specialists	6	${ }	${ }
Total (excludes outside directors)	**23**		**$2,544,270***

* Total may differ slightly from the sum of the individual items due to rounding.

Details supporting the derivation of the compensation numbers in Table III-D-4 are included in e-workpapers "IRR Salaries.xlsx" and "IRR

Operating Expense.xls." It should be noted that the numbers in the Total Salaries column in this table may not equal the number of employees times annual salary due to rounding.

iv. Materials, Supplies and Equipment

The IRR owns or leases various types of vehicles and equipment used by its Operating and G&A staffs. Costs for this equipment have been included in the calculation of the IRR's annual operating expenses. *See* e-workpaper "IRR Operating Expense.xls" for details concerning equipment and supplies (except for IT and MOW equipment and supplies, which are discussed separately below).

Company vehicles are needed at the IRR's Lynndyl headquarters. A pool of three Ford Explorers (a small SUV with all-wheel drive) is maintained at headquarters for use primarily by the headquarters Operating and G&A staff while traveling in the field on IRR business. Ford Explorers are also needed for the field transportation, mechanical and maintenance-of-way supervisory personnel. A total of four company vehicles are needed, including the three Headquarters G&A pool vehicles and one additional Ford Explorer for the Manager of Train Operations.

The IRR also needs miscellaneous office equipment and supplies including desks, telephones and janitorial supplies. Details on the miscellaneous equipment are provided in e-workpaper "IRR Materials and Supplies.xls."

v. **Other**

(a) **IT Systems**

The IRR's information technology systems have been developed by IPA Witness Joseph Kruzich. its experienced railroad IT expert. Mr. Kruzich reviewed the IRR's operating plan and G&A requirements to determine the railroad's basic computer and communications needs and the kind of support needed by its staff. The IT systems described below enable the IRR to operate safely and efficiently and to perform all administrative functions.

The IRR is small railroad that does not require the legacy mainframe systems that characterize Class I railroads The IRR's operations are similar to those of other small SARRs in other recent SAC rate cases such as *WFA*, in that it does not have extensive yard or switching operations. Furthermore, the IRR's traffic volumes and revenues are much lower than those of the SARR involved in *WFA*. although the IRR does have a greater variety of traffic. It has a low volume of train movements per day, as well as a small number of customers whose traffic originates or terminates on the IRR system and a total of only three interchange locations (one of which, Provo, UT, involves two other railroads). The IRR also handles primarily trainload movements, with multiple-car billing (using the RMI Revenue System to allocate revenues), with billing for individual railcars only for overhead non-coal movements. This reduces the complexity of the computer and communication systems required to support operations.

The IRR thus does not require a large data center facility to house mainframe computer systems and associated peripheral equipment. As described below, the IRR's IT system design is NT/PC-based, with outsourcing of many IT requirements to RMI in Atlanta, GA. The IRR's system can be housed in a room approximately 20' x 30', with normal office-environment heating and air conditioning. This room is located in the IRR's Lynndyl headquarters.

Based on the IRR operating plan and G&A staff departments/sizes, the capital requirements for IT and communications systems equal $1,997,976. The annual operating cost for IT and related communications equals $2,113,686 at year 2012 price levels. The table below shows the capital and annual operating expenses separately for information technology and communications systems.

TABLE III-D-9
CAPITAL AND OPERATING COSTS FOR IRR IT AND COMMUNICATIONS SYSTEMS

Item	Capital Cost	Operating Cost
Information Technology	$ 1,968,791	$2,015.583
Communications	$ 29,185	$ 98,103
Total	**$ 1,997,976**	**$2,113,686**

The IRR's computer and communications systems are described below. They have been designed to meet the IRR's mission-critical technology needs to achieve operating efficiencies, customer satisfaction, optimum staffing,[26]

[26] The IRR's IT personnel requirements are described above in the discussion of G&A personnel. The IT staff size is largely a function of the systems described in this section.

maximum productivity, and safe train operations. The costs shown in the workpapers are based on the IRR's highest daily train counts and number of annual carload transactions.

Transportation System. The key item in the IRR information technology architecture is RMI's Transportation Management Services ("TMS") package. TMS is an integrated system for managing day-to-day rail operations that is in use on several railroads. It includes modules for yard and inventory control, waybilling, train operations, switching settlements, demurrage, EDI consists, waybills, bills of lading, blocking instructions, work orders, switch instructions, and many other features This system is outsourced to RMI using frame relay communications from Lynndyl (where the major transactions reporting occurs) to Atlanta, GA. where RMI is located. Field personnel access the RMI system via the Internet. The annual operating expense for the RMI system is detailed in e-workpaper "IRR RMI Price Sheets.xls."

Crew Management System. A crew management system is needed to efficiently manage the IRR's train crews and equipment. The IRR will purchase a license from PS Technology for the SCAT Client Server system, and related equipment and software (Oracle Data Base). This system provides the capacity needed to schedule crew requirements involving slightly less than 50 train/engine/yard employees (peak year) and with three crew-change points over the IRR system. It also minimizes the need for a large staff of crew callers or other crew management personnel. Cost for the crew management system is further detailed in e-workpaper "IRR - Capital Budget xls."

Dispatching System. A computerized dispatching system, assisted by one human dispatcher on a 24/7 basis, monitors the movement of trains and other equipment at all times, and distributes traffic efficiently across the railroad. The IRR will purchase and implement a PC-based version of the Alstom CTC Dispatching system. This system is similar to the one that is currently being used by the KCS. This system has plenty of capacity to meet the IRR's needs and includes all necessary equipment. installation and on-site tests. A detailed description of the system's capacity is included in e-workpaper "IT Backup Workpapers No. 1 pdf."

Revenue Accounting. The IRR needs a revenue system to handle interline settlements for all the trainload transactions and single and multiple-car transactions. RMI has a revenue system that meets the IRR's requirements. In particular, the RMI Revenue Management Services (RMS) is a full-function revenue management system that has been certified by the AAR for Interline Settlement System (ISS) processing. This certification allows railroads using ISS/Connect to participate in the Interline Settlement System. ISS/Connect provides complex rate management, EDI management. freight billing, and support for industry reference files, revenue protection, and additional functionality. The RMS cost is based on the total monthly settlements. The IRR has an estimated maximum of 583,262 carloads annually that are processed through the revenue management system at a cost of $489,336 These costs are shown in e-workpaper "IRR - Operating Budget.xls "

Car Accounting. The IRR needs a receipt and payable car hire system, because the IRR owns some railcars and uses some railcars provided by its connecting carriers. RMI has a car hire system for receipts and payables that provides the necessary features needed by the IRR to keep track of its cars off-line and foreign cars on-line. This system computes charges due the IRR from foreign railroads (primarily UP) and the IRR's payables to foreign roads The system separates car earnings by designated owner groups, issues remittance and settlement summaries, flags non-moving cars and missing junctions and helps keeps track of assets with on-line access to car movement data. The annual operating expense for this system ($280,644) is based on the number of non-private interchange cars and intermodal units handled per month. *See* e-workpaper "IRR - Operating Budget.xls."

General Accounting. The IRR uses the SAGA MAS 200 package for its general accounting system. SAGA MAS 200 is an industrial-strength accounting software package that will adequately support all of the IRR's general accounting functions. It is capable of handling high-volume accounting transactions daily, and has multi-user network capabilities. SAGA MAS 200 provides financial snapshot and business analysis reporting and has the core accounting features needed to run a medium-size business. The software is designed to run on Windows 7 and a Windows NT operating system. The total operating and capital costs for this system, including hardware and training, is $72,776, which includes a Dell OptiPlex 390 PC, cables, HP LaserJet P3015dn printer and Dell PowerEdge T410 Server Details are included in e-workpaper "IRR - Capital Budget.xls."

Human Resource Management. The IRR uses Optimum Solutions, Inc.'s NT/PC-based system for human resources. This system covers the IRR's human resource data needs at an affordable cost. The software package includes all basic employee reporting features, employee profile tracking, attendance reports, benefit, insurance and COBRA reports compensation/job history reports, EEO and citizenship reports, organizational reports, and all OSHA and workers' compensation reports. The system uses a Dell OptiPlex 390, cables, an HP Laser Jet P3015dn printer and a Dell PowerEdge T410 Server. The total operating and capital cost for this system, including hardware and training, is $46,137. *See* e-workpaper "IRR - Capital Budget.xls."

Network and Router Equipment. The IRR needs networking capability and routers because it has a small number of computers in multiple locations Networking and router equipment permit these computers to communicate with one another. The IRR needs one router at each field reporting location and one at its headquarters. The IRR's communication network consists of a fiber optic/microwave and commercial telephone system. The costs for these items are included in the network infrastructure costs discussed elsewhere in this Part and in Part III-F. The IT operating-expense budget for a network computer system for LAN and WAN, routers at various locations, and internet access for headquarters and field locations is shown in e-workpaper "IRR - Operating Budget.xls." The primary network server also provides email functionality, document management and collaboration capabilities, SQL server capabilities, and other necessary network functions. Backup of these systems is also provided for in the capital budget.

Mr. Kruzich has also provided for a duplicate network server, which permits the testing and operation of modifications to the network system before rolling out changes to the production environment. It also provides redundancy for other network systems.

Workstations and Printers. Both desktop and laptop PC's are provided, and included in the IRR's IT costs, with a high-end configuration to run a state-of-the-art operating system while avoiding the need to purchase other applications. One PC is provided for each G&A employee as well as for operating personnel located at headquarters. Additionally, one PC is provided at each crew change point and all yard locations where employees are assigned. Laptops are provided for use by employees who are required to travel a considerable amount of their time. The total capital cost for desktop and laptop computers is detailed in e-workpaper "IRR - Capital Budget.xls."

The IRR needs a variety of printers for work orders, safety bulletins and normal office work such as printing contracts, correspondence and reports. A color printer is needed for various maps, charts and diagrams. Printers are also needed in the field and at interchange locations to print information relating to the work performed there. The equipment needs include a desktop laser printer for each desktop PC, a printer for laptop PCs where needed. one color and one line printer at headquarters, and one line printer at each yard location. *See* e-workpaper "IRR - Capital Budget xls."

Voice and Data Communications. The IRR needs a telephone system and telephone service to handle external and internal telephone activity. This system includes traditional telephones for each administrative employee. the NTS telephone system. a voicemail system and a calling card system. NexPath Telephony Sever-NTS Server Rack Mounted Systems is capable of handling 51 outside lines and up to 85 extensions, and thus accommodates the IRR's needs This system is capable of handling internal calls over the microwave system and external calls from various parties. The external calls would consist of local and long-distance telephone service, 800 services, paging and faxing. The cost of this system is included in the IT Capital Budget.

Data telecommunications to support the RMI transportation system from Lynndyl to Atlanta is provided by AT&T. This is a frame relay system that is based on estimated transactions. The Internet is used for data communications for all the field offices. The field offices also have Internet access to the RMI transportation system in Atlanta. Mobile (cellular) phones and pagers are provided for employees who need them to perform their work efficiently. The IRR's Operating budget also provides for an email service by Microsoft for each employee on the IRR. *See* e-workpapers "IRR - Capital Budget.xls" and "IRR - Operating Budget.xls" for details on the capital and operating costs for all of these items.

Software Maintenance. Software products such as PC accounting packages that run on a server, and tools such as security software and monitoring software, require payment of annual maintenance fees for support and upgrades. Some of these fees are included in the licensing agreement, such as that for the Oracle Solutions program which has an annual fee payable for the use of its product. Other providers have a flat charge for the package with no annual fees, but they will have enhancements from time to time with a specified charge for the upgrade The annual fees payable by the IRR are detailed in e-workpaper "IRR - Operating Budget.xls."

Railinc Services. The IRR requires some Railinc services to pass and receive car location information to/from UP and URC (its interchange partners) for the various interchange locations. The annual cost for Railinc service is shown in e-workpaper "IRR - Operating Budget.xls."

Security Software. The IRR also needs security software to protect its network from exterior intrusion due to the large amount of data that is transmitted from Lynndyl to Atlanta and other parts of the railroad. The system to be used is the Watchguard Firebox X6500e UTM Software Suite. The Watchguard suite offers comprehensive Unified Threat Management and is an easily managed firewall and AV/IPS security appliance for mid-size businesses requiring a secure, private network. The specifications for this system and its capital and operating costs are shown in e-workpaper "IRR - Capital Budget.xls" and "IRR - Operating Budget.xls."

(b) <u>Other Out-Sourced Functions</u>

As described earlier, several functions customarily provided in-house by large Class I railroads such as UP can be out-sourced by the IRR. Consistent with the stand-alone concept of an efficient, least-cost railroad, out-sourcing is used wherever the economics so justify without sacrificing service quality.

Out-sourced functions at the IRR include several finance and accounting functions, including preparation of income, property and payroll tax returns and financial/account auditing; legal services, including claims administration and investigation; and administration of the company's retirement plan. *See* e-workpaper "IRR Outsourcing.xls."

A number of independent accounting, payroll service and other firms have the experience and systems to perform these functions. For example, the payroll service firm Paychex has experience in complying with Railroad Retirement and other railroad-specific tax and regulatory reporting requirements. In the human resources area, regional and industry employers' associations are available as a resource for the IRR's internal human resources staff.

In addition, the IRR outsources the inspection of certain empty coal trains at the IPA Springville railcar repair facility located just south of Provo.

Empty coal trains arriving from locations south of Lynndyl (*i e* . IGS and the Milford interchange) and moving to UP- or URC-served origins in Utah east of Provo are inspected by IPA personnel at IPA's Springville railcar maintenance facility. The IRR contracts with the IPA car shop to perform this service and associated bad-order switching, which IPA Witness John Aguilar estimates at {

}. In the Base Year, 551 trains require this inspection/ switching service at a current cost of ${ }. This amount is included in the IRR outsourcing expense.

The IRR also outsources a portion of its legal work. As noted above, the IRR's G&A staff includes a Vice President–Law & Administration who will serve as the railroad's General Counsel. In addition, the IRR staff includes a General Attorney and a Manager of Safety & Claims, and also will be supported, as necessary, by the IRR's staff of Administrative Assistants. These individuals will be able to handle the majority of the legal work required for the IRR each year. The IRR will retain outside counsel to perform the balance of its legal work. IPA has calculated a total legal budget utilizing benchmark data correlating total legal spend to a percentage of company revenues, and then subtracted the IRR's internal legal expenses to yield an appropriate outside counsel expense.

By way of background, UP calculated an outside legal budget for the IRR in Docket No 42127 based upon a 2006 benchmarking study prepared by the consulting firm of Altman Weil that reported total legal expenses as a share of company revenues. *See* e-workpapers "UP 42127 Part III.D.pdf" at III.D-43 & n 80 and UP's Docket No. 42127 Reply e-workpapers "Altman Weil.pdf," "UP Legal Spend.xls," and "IRR Operating Expense Reply.xls," Tab "outsourcing," which IPA has included in its electronic workpapers in support of this Opening Evidence For companies with less than $250 million in annual revenues. Altman Weil reported an average annual legal spend of 0.96% of revenues. *See* e-workpaper "Altman Weil.pdf" at 6; *see also id.* (reporting average levels of only 0.42%, 0.28%, and 0.19% for higher-revenue companies).

Beginning with the Altman Weil 0.96% figure, UP adjusted this percentage share downward based on the decline in UP's legal spend as a percent of revenue during the same general time frame. {

}. *See* UP's Docket No. 42127 Reply e-workpaper "UP Legal Spend.xls." {

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Id.[27]

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[27] Reports indicate that total legal spending worldwide decreased by 1% from 2010 to 2011. *See* "Law Departments Increase Internal Staff and Keep More Work In-House, According to 2011 HBR Law Department Survey," HBR Consulting, at 2 (October 7, 2011) (*see* e-workpaper "2011 HBR Survey.pdf").
{ }

{

}. UP calculated a total legal budget of $931,840 for the IRR using this figure. UP subtracted the annual salary and fringe benefit expenses associated with the IRR's Vice President of Law and its General Attorney to calculate a proposed outside legal expense of $530,000.

In the present case, IPA is proposing an outside legal budget based on a similar percent of revenue calculation, but IPA utilizes more appropriate assumptions in several key respects.

First, the specific ratio that UP utilized in Docket No. 42127 is improper. HBR Consulting, of Chicago, IL, reports in a published survey that in 2011, "[t]otal legal spending as a percent of revenues worldwide was 0.37%." *See* e-workpaper "2011 HBR Survey.pdf" at 2; *id.* at 1 ("companies believe they can better contain legal costs with larger in-house teams and more restricted use of law firms"). IPA recognizes that this figure is an average that includes a range of different companies (in terms of company revenues and the specific industries represented), but UP's use of a figure so much higher than this average is unjustified for the IRR.

The IRR is not a public company. Accordingly, it will not incur legal expenses associated with many of the securities- and disclosure-related issues that public companies must address. Moreover, as a Class II railroad, the IRR is far less likely to incur any expenses associated with maximum rate litigation at the STB, which can generate significant legal expenses for a Class I carrier. (The overwhelming majority of rate cases before the STB have involved Class I carriers, and that is universally the case for rate cases involving complex stand-alone cost evidence.) Likewise, the IRR will not incur any legal expenses associated with line abandonments or acquisitions during the ten-year DCF period, which also tend to require significant expenditures for Class I carriers.

In addition, it is necessary to consider that both internal and outside counsel for the IRR likely will reside in Provo, Utah, where legal salaries are substantially lower than in other markets, such as the Washington, D.C. region where outside counsel for Class I railroads typically reside. *Cf.* Rachel M. Zahorsky, "What America's Lawyers Earn," ABA Journal (March 1, 2011) (*see* e-workpaper "Zahorsky.pdf") (indicating that the mean wage for attorneys in Salt Lake City, UT is only 82% of the mean wage for attorneys in Washington, D.C.) Attorneys in Provo (with a 2010 population of only 112,488) are likely to have an even lower mean wage than attorneys in Salt Lake City, UT.

It is also noteworthy that the internal legal staffing level that IPA is proposing for the IRR substantially exceeds published benchmark levels for a company the size of the IRR. For example, UP's own workpaper, the Altman Weil 2006 Law Department Metrics Benchmarking Survey, indicates that companies typically employ 3.5 total lawyers per $1 billion in revenue. *See* e-workpaper "Altman Weil.pdf" at 4. IPA has proposed that the IRR staff include two full-time internal attorneys despite the fact that the IRR's revenues are only

$107.7 million in 2013 (the IRR's first full year of operations). Stated differently, IPA has proposed a staffing level equivalent to approximately 19 total attorneys per $1 billion in revenue, which is well above the reported Altman Weil benchmark. In fact, IPA's proposed internal staffing is 5.3 times the level reported in the benchmark study from UP's evidence (19/3.5 = 5 3).

In light of these considerations, IPA has utilized a conservative figure of 0.675% to calculate the IRR's total legal spend as a percentage of revenues. IPA developed this figure by: {

} This figure is substantially higher than the 0.37% average figure reported by HBR Consulting for 2011. Based upon the 2013 revenues for the current version of the IRR of $107.7 million, IPA's calculation yields a total IRR legal budget of $726,867.

Second, UP has utilized an improper figure for the IRR's total internal legal expense. In particular, UP's internal cost estimate accounts only for the salaries of the IRR's two full-time attorneys and their associated fringe

[28] To reiterate, IPA has adopted a conservative assumption of utilizing attorney salary data for Salt Lake City, rather than what in all likelihood would be lower attorney salaries in Provo.

benefits. UP ignores the travel costs for these two employees and the cost of their laptop computers and desks. Even more importantly, UP ignores the expenses associated with the other IRR employees with at least some involvement in the legal function; namely, the Manager of Safety and Claims and the IRR's Administrative Assistants. While the duties of these employees would be broader than simply legal-related functions, it is improper to exclude consideration of their involvement entirely. (The base salaries for the attorneys in the present case also are higher than the base salaries of the attorneys in Docket No. 42127).

IPA has assumed that 50% of the expense of the Manager of Safety and Claims should be treated as legal expense, and that one-fourth of the total Administrative Assistants' expense should be treated as legal. (There are two Administrative Assistants supporting a President and three Vice Presidents, so a one-fourth allocation of expenses is appropriate.) The expense associated with this internal legal staffing is as follows:

Table III-D-10
Total Internal IRR Legal Expense

Employee	Count	Salary	Share Legal	Legal Salary Share	Fringe Ratio	Total	Travel
General Counsel	1	$[ ]	100%	$[ ]	1 413	$[ ]	$10,475
General Attorney	1	$[ ]	100%	$[ ]	1 413	$[ ]	$10,475
Manager of Safety and Claims	1	$[ ]	50%	$[ ]	1 413	$[ ]	$5,238
Administrative Assistants	2	$[ ]	25%	$[ ]	1 413	$[ ]	$0
				$360,623		$509,562	$26,188

Total Internal Legal Expense **$535,749**

In the aggregate, the total internal legal budget for the IRR in the present case is $535,749. Subtracting this internal budget from the $726,867 estimated total legal expense yields an outside counsel expense for the IRR of $191,118.[29] The combination of this outside counsel budget and the IRR's internal staffing level will be sufficient to cover the legal needs of a carrier as small as the IRR.

Estimated annual costs have been developed for outsourcing all of the functions described above. The total outsourcing expense in the IRR's first year of operations equals $1,038,292. Details are provided in e-workpaper "IRR Outsourcing.xls."

(c) Start-Up and Training Costs

The IRR's start-up and training costs have been calculated using the procedures approved by the Board in *WFA I*, slip op. at 51-54.

Initial training costs for the IRR's train crew personnel amount to $1.0 million. Training for these T&E employees is based on publicly available information related to training T&E employees. *See* e-workpaper "III-D-3 Training and Recruitment.pdf." The components of training costs for train crew personnel include the cost of providing the training ("course cost"), train crew

[29] This calculation results in a slight overstatement of outsourced legal expenses as the total legal budget is based on forecast 2013 IRR annual revenues whereas the IRR salaries and expenses shown above are annual 2011 expenses indexed to 4Q12.

wages (including fringes) and travel costs, and both classroom and on the job training are included.

Based on training course material available from MODOC Railroad Academy, conductor trainees receive four weeks of classroom training and five weeks of on the job training. Engineer trainees must complete the nine week conductor training and 16 weeks of additional training. MODOC's course cost for conductor and engineer training equals $6,492 and $26,484, respectively.[30] In addition to the course cost, train crew wages per week, including fringes, are included as follows: (1) novice conductors - $769; (2) conductors - $996; and (3) engineers - $1,185. The wages for conductors and engineers are based on 80 percent of the wages for these positions, which as described previously are based on the highest paid T&E personnel in the state of Utah.

Calculation of the training costs for the IRR's train crew personnel is shown in e-workpaper "IRR Operating Expense.xls," tab "T&E Training." The average training cost for train and enginemen is $30,024 per individual, including tuition, travel and salary as appropriate.

Training for the IRR's dispatchers is based on information available from UP's website which shows that dispatcher trainees must complete a 28 week training program. Training costs for the IRR's MOW employees are based on the weeks and cost of training accepted by the STB in *Otter Tail.*

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[30] The Engineer training course cost of $26,484 includes the $6,492 cost of the conductor training course.

IT Specialists are paid 1.6 weeks of wages for training based on information available on UP's website which indicates that IT personnel must attend an eight day class.

Initial hiring costs of ${ } per employee are included for rank-and-file employees based on information provided by UP in discovery in a document titled "2010 Training and Recruiting.xls." Recruiting costs for managerial and executive employees equal 10 percent of their first year's salary based on fees charged by several independent recruiting firms. Information regarding these firms and their fee structures is included in e-workpaper "III-D-3 Training and Recruitment.pdf." Subsequent annual recruitment and training expenses are based on a three percent average annual attrition rate, which is the training failure rate experienced by MODOC Railroad Academy. *See* e-workpaper "III-D-3 Training and Recruitment.pdf."

A total amount of $1.8 million has been provided for initial IRR training and recruiting costs. Further details concerning the development of this figure are included in e-workpaper "IRR Operating Expense.xls," tab "Training." Consistent with *WFA I*, start-up training and recruitment costs are treated as operating expense in the IRR's first year of operations.

(c) <u>Travel Expense</u>

Travel expenses have been included for all IRR employees at the Manager level and higher (except for the Customer Service Managers and the Assistant Controllers, as these positions do not require travel) and for the three outside members of the Board of Directors. Annual travel expenses of $10,475 per employee are included This amount is based on the most recent available annual survey of corporate travel managers performed by Runzheimer International, which estimates the annual cost of corporate business travel. *See* e-workpapers "IRR Operating Expense.xls" and "III-D-3 G&A Other.pdf."

4. Maintenance-of-Way

The MOW plan for the IRR was developed by Gene Davis, P.E. Mr. Davis brings considerable hands-on experience with railroad MOW activities, having served in Norfolk Southern Railway's Engineering Department for eighteen years including service as a Track Supervisor, Bridge and Building Supervisor, and Assistant Division Engineer-Bridges. He is also an FRA-qualified track inspector.[31]

a. General Approach to Developing the MOW Plan

Mr. Davis's MOW plan follows the precepts approved by the Board in recent prior SAC rate cases, including those discussed in *WFA I* and *AEPCO 2011*. The *WFA I* SARR, in particular, was roughly comparable in size to the IRR although it had considerably higher traffic density in terms of gross ton-miles per mile.[32] It should also be noted that the IRR as configured for this case does not

[31] Mr. Davis's detailed Statement of Qualifications is set forth in Part IV.

[32] The SARR in *WFA I* had 217.95 route miles, compared to the IRR's 174.96 route miles. The *WFA I* SARR had a maximum density of 154.30 million gross tons per mile ("MGT"), and this density extended over 128 34 route miles or 58.9 percent of the total route-miles. In contrast, the IRR has a maximum density

include the mountainous territory east of Provo which was part of the SARR in Docket No. 42127, and which is more challenging than the territory west of Provo from a maintenance standpoint.

The IRR's MOW plan includes a field staff sufficient to perform day-to-day inspection and maintenance activities, supported by a managerial/ office engineering staff that reports to the IRR's Chief Engineer. Capital maintenance programs are also required during the ten-year DCF period to renew/replace the fixed facilities, including the principal elements of the track structure. The IRR's MOW staff also was structured to include planning, budgeting and contracting related to annual capital programs.[33]

Some maintenance that is considered operating expense is also contracted out, but the vast majority of day-to-day spot maintenance work is performed by the IRR's field MOW employees with assistance and supervision from the office engineering staff. This includes FRA-required twice-weekly track inspections, non-scheduled or special inspections necessitated by storms or

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of 50.3 MGT for the Lynndyl-IPP Industrial Lead segment, a distance of only 1.55 miles. The average maximum density for the entire Lynndyl-Milford segment (representing 50.9 percent of the IRR's total route miles) is 40.9 MGT. Thus, the maximum density on the *WFA I* SARR was nearly four times the maximum density on the IRR's busiest line segment.

[33] Consistent with the treatment of program renewal work in other recent rate cases including *AEPCO 2011*, *WFA I* and *AEP Texas*, all of the IRR's program maintenance work is performed by contractors and the cost of capital programs is reflected in the DCF model. Under the DCF model, a portion of the IRR's fixed assets are assumed to be renewed each year even though the IRR starts operations with a new physical plant, which means there will be no need for significant program work in the first ten years of its operations.

extreme heat swings, monthly turnout and walking track inspections, annual bridge and culvert inspections, at-grade, rail-highway crossing protection tests, and routine day-to-day maintenance including spot-surfacing and lining rough track areas, repairing malfunctioning signals and power switches, replacing rail and welding track components, replacing broken turnout components, performing minor repairs to bridges, making emergency infrastructure repairs such as those caused by a derailment, replacing a broken rail, joint and frog maintenance, bridge and culvert emergency repairs, at-grade highway/rail crossing gate repairs or replacement and minor vegetation control.

In developing the IRR's MOW plan, Mr. Davis has provided a field organization and supervisory/support staff appropriate to each needed maintenance function given the railroad's geographic scope. terrain, traffic volume and gross tonnages by line segment.[34] The basic functions include track inspection and routine maintenance, communication and signal inspections, testing and maintenance, bridge/culvert inspection and maintenance, and minor building maintenance, as well as budgeting and administrative support. Mr. Davis also considered the equipment needed to perform each function. as well as the

[34] Mr. Davis's development of IRR's field MOW staff is guided by the principle that an efficient. least-cost SARR does not require unionized employees and does not face the same constraints as Class I railroads in terms of the level of supervision required and ability to cross-train. This enables field MOW employees to be utilized in a more versatile manner. such that an employee can perform more than one function where consistent with the level of specialization needed

maintenance work (other than capital programs) that appropriately could be contracted out. The staff and equipment described below are those needed to accommodate IRR's peak-year operations in terms of gross tons transported.

b. MOW Personnel

The IRR's MOW personnel (employee) requirements are summarized in Table III-D-11 below.

TABLE III-D-11
IRR MAINTENANCE-OF-WAY PERSONNEL

Position	No. of Employees
HQ Office/Supervisory (based at Lynndyl)	
Track Engineer	1
Communications & Signals Engineer	1
Bridge Engineer	1
Engineer of Programs, Budgets, Safety & Training	1
Subtotal	4
Field	
Roadmaster	1
Assistant Roadmasters	3
Track Crew Foremen	2
Track Crew Members	4
Roadway Machine Operators	4
Welders/Helpers/Grinders	2
Roadway Equipment Mechanic	1
Smoothing Crew Foreman	1
Smoothing Crew Member/Machine Operator	1
C&S Supervisor	1
Signal Maintainers	3
Communications Technician	1
Communications Maintainer	1
B&B Supervisor/Inspector	1
B&B Machine Operator	1
B&B Foreman	1
B&B Carpenter/Helper & Water Service	1
Subtotal	29
Total	**33**

The MOW personnel shown in Table III-D-6 equate to 6.02 mainline track miles per employee (198.98÷33). This is comparable to the 5.95 mainline track miles per MOW employee accepted by the Board in *AEPCO 2011* (3,326.24÷559). *Id*, slip op. at 32, 65.

c. <u>MOW Organization by Function</u>

The IRR's field MOW organization is dictated by the railroad's geographic scope (route miles), track miles and peak-year traffic volume measured by the gross tons traversing each line segment. (Tonnage is the metric that has the greatest single impact on railroad infrastructure condition and largely dictates how MOW resources should be allocated) In addition, the distances that field forces must travel to cover their assigned territory are considered. The general office MOW staff (which reports to the Chief Engineer) is structured to provide adequate supervisory and administrative support to the field forces, as well as to prepare the annual MOW budget and supervise contractors in their performance of MOW work. The field and office support personnel requirements of each MOW function are discussed below.

i. <u>Track Department</u>

The IRR's Track Department consists of 20 employees, organized into the positions shown in Table III-D-12 below. The annual compensation associated with each position, by employee and in total, is also shown in the table.[35] A discussion of each position follows the table.

TABLE III-D-12 IRR TRACK EMPLOYEES			
Position	**No. of Employees**	**Comp. Per Employee**	**Total Comp.**
Track Engineer	1	$ { }	$ { }
Roadmaster	1	$ { }	$ { }
Asst Roadmasters	3	$ { }	$ { }
Track Crew Foremen	2	$ { }	$ { }
Track Crew Members	4	$ { }	$ { }
Roadway Machine Operators	4	$ { }	$ { }
Welder/Helper/Grinders	2	$ { }	$ { }
Roadway Equipment Mechanic	1	$ { }	$ { }
Smoothing Crew Foreman	1	$ { }	$ { }
Smoothing Crew Member/Machine Operator	1	$ { }	$ { }
Total	**20**	x	**$1,430,285**[1]
[1] Total compensation in this and subsequent MOW personnel tables may not add due to rounding.			

General Office Staff. The Track Department is headed by the Track Engineer. He is responsible for maintaining all IRR track, preparing the annual track budget and arranging for/overseeing contractor performance of track maintenance (capital) programs.

[35] Derivation of the annual compensation shown in connection with each position is shown in Part III-D-4-b. Compensation amounts are salaries excluding fringe benefits

Field Staff. Given the IRR's small size and maintenance needs, the IRR does not need any intermediate field supervision between its Track Engineer and Roadmaster. The IRR's Roadmaster is supported by Assistant Roadmasters. track crews and other personnel described below.

Roadmaster and Assistant Roadmasters. The Roadmaster is the IRR's principal field maintenance supervisor. He is responsible for day-to-day track maintenance. The IRR has a single Roadmaster district, reflecting its relatively small size (174.96 route miles, which is the equivalent of a single UP mainline subdivision).[36]

The Roadmaster is assisted by three Assistant Roadmasters. Two Assistant Roadmasters are primarily responsible for conducting scheduled routine and special track inspections in accordance with all applicable FRA regulations (specifically 49 CFR § 213.233) and are trained and certified by the IRR.[37] One Assistant Roadmaster is primarily responsible for the territory between Provo and

[36] The IRR's Roadmaster district covers 198.98 mainline track miles. This is comparable to the 166.3 average mainline track miles per Roadmaster district approved by the Board in *AEPCO 2011* (3,326 24 mainline track miles divided by 20 Roadmaster districts), considering that (i) the *AEPCO 2011* SARR's traffic density exceeded 70 MGT per track mile for 16 of the 20 Roadmaster districts (*id.*, slip op. at 66) whereas the IRR's maximum density (for the Lynndyl-Milford segment) is only 40.9 MGT per track mile, and (ii) the primary duty of one of the three Assistant Roadmasters is to assist the Roadmaster in planning and supervising the field track forces.

[37] It is now common in the railroad industry to have Assistant Roadmasters perform track inspections. This obviates the need for separate Track Inspector positions. The frequency of track inspections is dictated by the FRA track classification. IRR maintains mostly FRA Class 4 track which requires inspection twice per week with at least one calendar day interval between inspections.

Lynndyl and the other is primarily responsible for the territory between Lynndyl and Milford. In addition to performing track inspections, these individuals also assist in routine field supervision of the track crews (described below). The third Assistant Roadmaster spends most of his time assisting the Roadmaster with the performance of other MOW activities, such as performing routine switch inspections, vehicle maintenance, scheduling the work of the track and other field crews, checking quality behind the track crews and other light maintenance, as well as additional track inspections as dictated by temperature, weather conditions or emergency situations. The third Assistant Roadmaster also assists with routine track inspections when one of the other two Assistant Roadmasters is on vacation or otherwise unavailable.

Track Crews The IRR employs two field track crews, each consisting of a Foreman and two Crew Members who are essentially track laborers. (In addition each track crew is assigned a backhoe operated by a machine operator, who effectively is a third track crew member) One crew is responsible for day-to-day maintenance of the mainline between Lynndyl and Milford and Milford Yard, the other is responsible for day-to-day maintenance of the mainline between Provo and Lynndyl (including the Coal Wye tracks), the tracks in the N. Springville locomotive maintenance facility, and Lynndyl Yard.[38]

[38] *See* e-workpaper "MOW Roadmaster Territories.xls." The track crew responsible for the territory between Provo and Lynndyl, which has considerably lower density and fewer passing sidings than the territory between Lynndyl and Milford, can assist the Lynndyl-Milford track crew as needed.

These crews perform various tasks in connection with routine track maintenance, such as correcting track geometry defects (surface, line and gauge), repairing detected rail defects, replacing missing/broken joint bars and bolts or spikes, replacing failed tie plates/insulators/clips, replacing occasional defective ties at critical locations such as joints, switch points and frogs, removing snow/ice from switches, repairing rail lubricators, minor at-grade highway-rail crossing repairs, assisting smoothing gangs (upon request) and replacing/repairing damaged signs

The territory assigned to each field track maintenance crew, the crew size, and the tasks these crews are expected to perform are all consistent with modern practice on Class I and regional/short line railroads (many of which use two-person track crews). The crew territories also reflect the concept that some work traditionally handled by large, in-house track program maintenance gangs at a Class I railroad is contracted out (as described further below). Moreover, in addition to the backhoes assigned to each track crew's territory, the Roadmaster has available an excavator with dump truck and lowboy trailer and a Prentice Loader, with operators. This further limits the need for additional track and other field personnel.

Roadway Machine Operators. Mr Davis has staffed the IRR with a total of four Roadway Machine Operators. One Operator is assigned to each of the two backhoes with one backhoe assigned to each track crew's territory. One additional Operator is assigned to an excavator and one to a Prentice Loader, both of which are available system-wide. The excavator operator is also assigned a hi-rail, three-way (rotary) dump truck and lowboy trailer (used to move the excavator). This equipment is used to maintain the IRR's ditches as well as to transport ballast, crushed rock or other materials that might be necessary in various MOW activities. Together with the two backhoes, the excavator can easily keep the IRR's ditches clean and free-flowing. It should be noted that much of the UP roadbed underlying the lines being replicated by IRR is on fill or embankment with few parallel ditches (mainly in cut sections). Thus, much of the IRR route does not feature ditches that need frequent cleaning or repairing.

Additional machine operators are assigned under other classifications, such as Smoothing Crew (Tamper or Regulator Operator) Member or Foreman. Track crew members operate a Hi-rail Boom Truck, one of which is assigned to each track crew whose members are not machine operators.

Welder/Helper/Grinders. The IRR employs one, two-person welding crew, coinciding with the single Roadmaster district. The welding crew consists of a welder and a welder helper. There are substantially fewer turnouts on the IRR compared to those for which UP is responsible today, as well as very few joints to maintain, so there will not be much need for welding repair on the brand-new IRR. However, welding crew members are qualified and trained to Thermite-weld joints where replacement rail is installed as well as to repair engine wheel burns, chipped rail ends or localized rail flow problems and maintain turnout and rail crossing frogs and switch points without removing them from the track.[39] Additionally, the welding crews will assist the B&B forces when welding on steel bridges is required. Although the IRR's main track is comprised entirely of continuous welded rail (CWR), there are some joints associated with turnouts, insulated joints and defective rail replacement locations. Rail ends must be maintained and insulated joints may require slotting to prevent joint or signal failure and premature rail removal/replacement caused by significant rail-end batter and chipping. In addition, welding crews provide backup support on larger jobs such as contracted flash butt/Thermite welding programs and rail detector car/rail grinding operations. The welding crew is assigned a hi-rail flatbed truck equipped with a self-contained, diesel-driven electric welding generator, cable crane winches for handling molds, and oxygen and acetylene tanks, as well as necessary hand tools and other welding equipment.

Roadway Equipment Mechanic. The IRR also needs one Roadway Equipment Mechanic. This individual is responsible for maintaining and performing routine repairs to IRR field equipment, including its tampers, regulators, backhoes and excavator as well as the other specialized equipment assigned to the field MOW forces. The Roadway Equipment Mechanic is assisted by the Machine Operators who perform simple daily maintenance tasks on their

[39] It is much more efficient to do welding in place rather than to remove the defective frog, install a replacement and transport the defective frog to a shop for repairs.

machines. Trucks (hi-rail and regular) are maintained at dealerships with local mechanics used to perform most auto or truck-related repairs and maintenance.

Smoothing Crew. The IRR employs one, two-person smoothing crew, which performs spot surfacing and lining of the track as needed to correct any significant surface irregularities noted in geometry test car data, or variations found by an Assistant Roadmaster during track inspections. Given the IRR's new track structure, it is unlikely that there will be many surface or line irregularities within the first ten years of the railroad's existence.[40] Most surfacing and lining takes place in areas with curves. The smoothing crew consists of a Foreman/Tamper Operator (who obtains the crew's track protection) and one Smoothing Crew Member (Ballast Regulator Operator). This crew is assigned a Tamper and a Ballast Regulator. The Tamper is used to surface and line track. The Ballast Regulator is used to move ballast, restore the roadbed section and shoulder ballast, fill the tie cribs and sweep the track following surfacing and lining. Each smoothing crew operator is cross-trained on the other's machine so that during times of vacation, the primary fill-in will be from this crew.[41] This crew assists field track forces and contractors with derailments or other problems

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[40] Even where existing railroads have installed CWR, it usually replaced older, jointed rail whose joints took a pounding that tended to damage the roadbed over time The IRR does not maintain any old roadbed that has been pounded/ damaged by trains running over jointed rail for many years.

[41] Should the ballast regulator need to fill-in on the lead tamper, a replacement operator can be drawn from the backhoes, excavator or Prentice Loader machines

requiring minor surfacing work. If additional labor is needed to assist a smoothing crew in unusual circumstances, or in other instances such as during vacation times, it can be drawn from the nearest track crew or other machine operator who has been cross-trained on the smoothing crew machinery.

ii. Communications & Signals Department

The IRR's Communications & Signals (C&S) Department consists of seven employees. The specific positions and compensation levels in this department are shown in Table III-D-13 below.

TABLE III-D-13 IRR C&S EMPLOYEES			
Position	**No. of Employees**	**Comp. Per Employee**	**Total Comp.**
Communications & Signals Engineer	1	$ { }	$ { }
C&S Supervisor	1	$ { }	$ { }
Signal Maintainers	3	$ { }	$ { }
Communications Technician	1	$ { }	$ { }
Communications Maintainer	1	$ { }	$ { }
Total	7	x	$ 592,557

General Office Staff The C&S Department is headed by the Communications & Signals Engineer. This Engineer position is responsible for all communications and signals-related functions, assuring that the proper tests are conducted and that any necessary maintenance is being performed. This position is also responsible for developing the necessary capital programs to keep all signal and communication equipment functioning reliably as well as supervising outside contractors who maintain the communications equipment including microwave towers and associated equipment and radios. This individual works closely with the C&S Supervisor to ensure that any signal or communication problems are handled promptly.

Field Staff. The field staff is led by one C&S Supervisor. The C&S Supervisor position is responsible for field supervision of the Signal Maintainers, Communications Maintainer and Communications Technician (described below). The C&S Supervisor is centrally located at Lynndyl to provide adequate coverage of the IRR geographic territory.

Signal Maintainers. The IRR employs three Signal Maintainers. These positions are responsible for scheduled inspections and routine testing and maintenance of the IRR signal system. Signal Maintainers repair defective trackside signals that govern train movements,[42] repair/replace at-grade, highway-rail crossing protection devices, perform monthly FRA-mandated tests and change out broken signal bulbs. The number of Signal Maintainers required is a function of the number of AAR signal units.[43] Based on IPA Witness Victor Grappone's calculation that 3,261 total signal units are required to operate the IRR system safely and efficiently, Mr. Davis provided three Signal Maintainers, which equates to one Maintainer per 1,087 signal units. This number is quite conservative; *see*,

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[42] Since the IRR hosts only 89 miles of CTC signaling, there is no need for a large C&S MOW force.

[43] An AAR signal unit is a measure of the difficulty of maintaining a particular signal device. There are normally more AAR signal units than there are individual signals.

e.g., *AEPCO 2011*, slip op. at 73 where the Board accepted one Signal Maintainer per 1,250 SARR signal units.

Communications Technician. The IRR employs one Communications Technician who is primarily responsible for maintaining train crew radios and other communications devices and is based at Lynndyl. The Technician is on call if a problem arises in the CTC control center and can be supplemented by assistance from the Communications Maintainer if necessary.

Communications Maintainer The IRR employs one Communications Maintainer who is primarily responsible for maintaining communication devices throughout the IRR system and assists the Communications Technician when applicable. This position is based at Lynndyl and also assists with problems in the CTC Control Center when necessary.

iii. Bridge & Building Department

The IRR Bridge & Building (B&B) Department consists of five employees. The specific positions and compensation levels in this department are shown in Table III-D-14 below

TABLE III-D-14 IRR B&B EMPLOYEES			
Position	**No. of Employees**	**Comp. Per Employee**	**Total Comp**
Bridge Engineer	1	$ { }	$ { }
B&B Supervisor/Inspector	1	$ { }	$ { }
B&B Machine Operator	1	$ { }	$ { }
B&B Foreman	1	$ { }	$ { }
B&B Carpenter/Helper	1	$ { }	$ { }
Total	**5**	x	**$ 390,004**

General Office Staff. The IRR B&B Department is headed by the Bridge Engineer who is responsible for inspections and maintenance of the IRR bridges and culverts (there are no tunnels), and for inspections of and minor repairs to buildings. This position is also responsible for preparing the annual bridge repair budget and supervising the contractors who perform periodic bridge maintenance and/or major structural repairs, as well as periodic building maintenance. With the implementation of the revised FRA Part 237 regulations on September 13, 2010, the Bridge Engineer also will be a qualified Professional Engineer (PE). The IRR office and field staff is sufficient to comply with FRA Bridge Management Program requirements.

Field Staff. The B&B field staff is not large, reflecting the fact that the IRR has a total of only 48 bridges, all of which are constructed using modern technology with concrete and steel components. That combination results in little or no annual maintenance to the structures – unlike bridges with timber components which are common on Class I railroads, including some located on the UP lines replicated by the IRR

B&B Supervisor/Inspector. FRA regulations require a railroad to have a bridge supervisor and a bridge inspector. If appropriate, given the number of bridges to be inspected and maintained, a single individual can perform both functions. Given its small number of bridges and the absence of tunnels, the IRR employs one combined B&B Supervisor/Inspector, who reports to the Bridge Engineer.[44] This individual is headquartered at Lynndyl along with the Bridge Engineer. The B&B Supervisor/Inspector is primarily responsible for performing annual and periodic bridge and culvert inspections, and for conducting periodic inspections of the IRR's buildings. He/she also recommends minor bridge repairs/maintenance to the B&B crew or, on occasion, the Roadmaster, to the extent the repairs (such as tightening or restoring missing bolts, clearing debris from bridge piers and culvert inlets, *etc.*) are within the capability of a field track crew or backhoe or excavator operator. Major bridge and culvert repairs are contracted out.

Other field B&B employees The B&B Department's field employees also include one B&B Machine Operator, and one B&B crew that performs routine bridge and culvert maintenance. The B&B Supervisor is assisted

[44] The Bridge Engineer would also participate in bridge inspections when feasible Otherwise the Bridge Supervisor/Inspector would use a member of the B&B crew to assist during inspections, as such inspections are never conducted by a single person.

by a B&B Machine Operator, who is equipped with a rubber-tired bridge hoist/crane. The B&B crew consists of a Foreman and a Carpenter/Helper. This crew, working in conjunction with the bridge hoist, performs bridge and culvert repairs to the extent they do not involve major pier or superstructure repairs, which would not occur during the foreseeable future and which would be contracted out. Any needed welding of steel bridge components is accomplished by utilizing the welding crew which is qualified in bridge welding procedures

iv. Misc. Administrative/Support Personnel

The IRR employs one additional Engineering administrative and support person at the Lynndyl headquarters who is dedicated to the MOW function but who does not support any particular field sub-department. This person, the Engineer of Programs, Budgets, Safety & Training, reports to the Chief Engineer and helps develop the annual MOW budget (including the capital or program budget) as well as interfacing with contractors performing both program and day-to-day work and with governmental agencies involved in public projects that affect the railroad. He/she also deals with other MOW administrative matters involving environmental, safety and training, as well as payroll and monitoring/payment of contractor invoices.[45] This Engineer has an annual salary of ${ }.

[45] The IRR's purchasing function is centralized within the Finance & Accounting Department, discussed above under General & Administrative expenses. However, purchasing associated with the IRR's MOW function is coordinated by the Engineer of Programs, Budgets, Safety & Training.

d. Compensation of MOW Employees

Salaries of IRR MOW personnel, other than the Chief Engineer (who is included in the Operating personnel discussed earlier in Part III-D), are set forth in Tables III-D-12 through III-D-14 above. The total annual compensation of these MOW personnel in the Base Year (excluding fringe benefits) equals $2.5 million MOW salaries are based on the salaries paid by UP to MOW personnel in 2011. as shown in UP's Wage Forms A and B, indexed to 4Q12 levels. Details are provided in e-workpaper "IRR Salaries.xls."

e. Non-Program MOW Work Performed by Contractors

While IRR's in-house MOW forces handle most day-to-day maintenance of IRR track and facilities, it is more cost-effective to contract out some maintenance work that is often treated as operating expense. The treatment of such contracted work by the IRR is consistent with the approach approved by the Board in *WFA I*, slip op. at 69-73 and *AEPCO 2011*, slip op. at 75-76.

Such contracted work involves several broad categories including: (i) routine maintenance that can be scheduled on a regular basis but is not performed frequently enough to justify IRR investment in the equipment and personnel required to accomplish it (such as track geometry, ultrasonic rail testing, rail grinding and ballast cleaning); (ii) unplanned maintenance that does not occur at regular intervals and is more economically handled by contractors who have the requisite expertise and specialized equipment available (such as snow and/or storm debris removal and bridge pier or superstructure repairs); and (iii) unplanned maintenance events requiring more employees or specialized equipment than the IRR supports because of the infrequency and unusual nature of the events (such as removing damaged cars/lading and repairing the track structure after a major derailment or weather event/storm).

Specific areas of maintenance that are performed by contractors are described below.

i. **Planned Contract Maintenance**

Track Geometry Testing. Track geometry testing is a routine maintenance function. The frequency of such testing is generally a function of the annual gross tonnage moving over the track. Such testing ensures that the track and related structures meet all FRA standards in terms of alignment, gauge and profile. Track geometry test results are used to prioritize work by the smoothing crew. Geometry testing is required and completed with varying frequency, depending on the annual gross tonnage moving over various portions of the IRR. Generally, track carrying between 5 and 30 million gross tons per year ("MGT") is tested once per year; track carrying 30 to 60 MGT is tested twice per year and track carrying more than 60 MGT is tested three times per year. These frequencies are generally consistent with Class I railroad practice. The frequencies assumed with regard to testing track carrying above 30 MGT are conservative on a newly-constructed railroad that features better roadbed compaction, drainage, ballast and subballast, rail and timber. The newer construction manifest in the track structure will hold up better than average. Also.

the IRR will have experienced no roadbed damage from previous use of jointed rail, where low joints developed from batter weakening the sub-grade over time.

The cost of track geometry testing is ${ } per track mile This amount is based on information provided by UP in discovery (*see* e-workpaper "MOW Costs.xls," tab "Geometry Testing") Mr. Davis utilized the latest UP contract cost and indexed that amount to 4Q12 The total annual miles of testing and related cost calculations are detailed in e-workpaper "MOW Costs.xls," tab "Annual MOW Expenses."

<u>Ultrasonic Rail Testing</u>. Ultrasonic rail testing is important in preventing derailments because it helps reveal internal rail defects before failure that could cause disruptions to IRR operations FRA regulations (49 CFR § 213.237) require testing rail to locate internal defects in Class 3 track over which passenger trains do not operate at least once every 30 MGT or once a year, whichever interval is longer, and similar testing of Class 4 through 5 track at least once every 40 MGT or once a year, whichever interval is shorter. Consistent with these standards, the IRR conducts ultrasonic rail testing at least once a year on all of its main lines (it has no track carrying greater than 40 MGT annually). Branch lines are tested once a year. These testing frequencies are more than adequate given that the IRR starts operations with all new rail on its main tracks and sidings.

Based on a spreadsheet provided by UP in discovery, the average cost of ultrasonic rail testing is ${ } per track mile indexed to 4Q12 prices for each pass over the track with a test car *See* e-workpaper "MOW Costs.xls," tab "Rail Flaw Detection" for details. The total annual miles of ultrasonic testing and related cost calculations are detailed in e-workpaper "MOW Costs.xls," tab "Annual MOW Expense."

Rail Grinding. Rail grinding is a part of most Class I railroads' MOW plans that is deemed necessary based on traffic, tonnage and rail characteristics, while extending the service life of the rail and increasing locomotive fuel efficiency. Studies have indicated that premium rail in high-density territory, even with heavy curves, can withstand well in excess of 150 MGT without the need for grinding.[46] Here, due to the moderate annual tonnage, no 136-pound premium CWR rail is being used on the IRR main tracks; instead standard 136-pound CWR is used on all IRR main tracks. To be conservative, the IRR will rail grind consistent with the approach used in *WFA*, in that rail grinding will be performed every 60 MGT on mainline track not constructed of premium rail. Tangent rail and rail in curves less than three degrees receive one pass while rail in curves equal to or greater than three degrees receives two passes. Switches, rail crossings (diamonds) and rail located in at-grade road crossings also will be ground at the same time that normal rail grinding is performed.

[46] *See* Kevin Sawley, Transportation Technology Test Center Inc., Report 928, "North American Rail Grinding Practices and Effectiveness," August 1999, *Railway Track and Structures*, December 2000, page 15 (included as e-workpaper "grinding.pdf").

The annual cost per mile allocated to rail grinding is \${ } per pass mile. This cost is based on information provided by UP in discovery in Docket No. 42127 { } indexed to 4Q12. The total miles of grinding and the related cost calculations are detailed in e-workpaper "MOW Costs.xls." tab "RailGrinding Cap. Costs." Switch grinding is performed at the same intervals as the rail grinding, also at a 4Q12 cost of \${ } per mile. The quantity has been included in the total rail grinding effort to be accomplished.

In *WFA I*, the Board treated the cost of rail grinding as an operating expense, notwithstanding the complainant's argument that it should be capitalized because it extends rail life. *Id*, slip op. at 71. However, the Board accepted capital treatment for this item in *AEPCO 2011*, slip op. at 77. It is now rail industry practice to capitalize the cost of rail (and related switch) grinding and, { } Accordingly, IPA capitalizes rail grinding costs.

<u>Ballast Cleaning/Undercutting</u>. Recognizing that the IRR system carries coal unit trains, over time the ballast may become fouled and require shoulder cleaning (and occasional undercutting) MOW activities. Little such work would be required in the early years of IRR operations but, after year three, about five percent of the IRR's main and passing siding mileage should be cleaned each year or about ten miles annually at a cost of \$19,500 per year. These costs are detailed in e-workpaper "MOW Costs.xls," tab "Shoulder Cleaning Costs." By

taking a proactive approach to shoulder cleaning, wholesale undercutting should not be necessary during the ten-year DCF period.

Yard Cleaning. The IRR's yards should be cleaned once a year to ensure that debris does not affect rail operations. The IRR has a total of two small interchange-only yards, located at Lynndyl and Milford. The amount and cost of yard cleaning required in these yards is based on Mr. Davis's experience. Details of the calculations are shown in e-workpaper "MOW Costs.xls," tab "Yard Cleaning." The total annual cost of yard cleaning is $9.500 per year.

Vegetation Control. Weed spraying, brush cutting and mowing are necessary to prevent overgrowth into the rail bed or other structures, which can cause a safety hazard. The most obvious and critical vegetation control concerns the ballast section. If vegetation is allowed to flourish in the ballast section, it will soon foul the ballast and interfere with the most important function of ballast, which is to permit water to drain from the track structure, uninterrupted. If water is allowed to be retained in the track structure, it can reduce tie life and destabilize the track structure, thus increasing the risk of track irregularities and derailments. Vegetation control also is critical in the vicinity of at-grade, highway-rail crossings to ensure the safety of both train operations and the road traveling public.

IRR vegetation control requirements are based primarily on the climatic conditions and annual rainfall in the geographic areas it serves. The IRR system can control potential vegetation growth on its system by weed spraying once per year in the spring with a second application as needed about three to five weeks after the initial application.

The annual cost of vegetation control is based on Mr. Davis's experience. The total cost per mile of vegetation control is $113.74, with a total annual expense of $19,900. *See* e-workpaper "MOW Costs.xls," tab "Annual MOW Expenses."

Very little brush-cutting should be required because the IRR right-of-way will be cleared during construction and much of the right-of-way is located in areas where brush does not grow readily Scheduled, periodic weed spraying will inhibit brush growth greatly. Because brush and weeds sometimes tend to accumulate near road grade crossings, the IRR's system-wide excavator and the Roadmaster's backhoes will be used as needed to keep the right-of-way cleared near road crossings where contracted vegetation control work may not be sufficient.

<u>Crossing Repaving</u>. At-grade, highway-rail crossings must be repaved periodically. Asphalt pavement is typically used with treated hardwood crossing timbers in many public grade crossings. The life of asphalt pavement is largely a function of highway/road traffic, at least beyond 24 inches outside each rail, although rail traffic is also a factor within the crossing zone proper. A typical pavement application will last eight to twelve years, or longer. Consequently. there should be little need for the IRR to begin re-paving activities immediately. However, to be conservative, and consistent with the approach used in the DCF

model, Mr. Davis assumed that paving would begin in the IRR's first year of operations. As the paving should last at least ten years. Mr. Davis assumed that ten percent of the total crossing paving quantity would be re-paved each year. The total cost of crossing paving is $162,404 annually. This amount is capitalized as it is performed in conjunction with the annual capital (renewal) program. *See* e-workpaper "MOW Costs.xls," tab "Crossing Repaving."

Equipment Maintenance. Normal maintenance of company-owned or leased equipment is contracted out, although the IRR employs one in-house mechanic who performs routine maintenance and repairs to the basic equipment used by its field track forces. Equipment that may require additional maintenance/repair by contractors (because it may be beyond the capability of the IRR's mechanic) includes hi-rail trucks, excavators and backhoes, ballast regulators, tampers, hydraulic power units and certain power hand tools. The IRR's mechanic is prepared and equipped to perform preventive maintenance and straightforward repairs even to this equipment.

A generally-accepted cost in the railroad industry for the annual cost of maintaining MOW equipment is five percent of its purchase price.[47] This amounts to $188,833 annually. *See* e-workpaper "MOW Costs.xls," tab "Annual MOW Expenses."

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[47] In *WFA I*, slip op. at 69, the Board accepted a higher figure on the basis of a special study performed by the defendant. In this case, UP did not provide any information on its annual equipment maintenance costs in discovery, and Mr. Davis believes the five percent figure is reasonable

Communications System Inspection and Repair. Periodic inspection and planned maintenance of the IRR communications system, which is described in detail in Part III-F-6 below, is performed in part by contractors with assistance from the IRR's in-house Communications Technician and Maintainer. The IRR communications system includes microwave towers, fiber optics and LMR radio facilities, which are inspected annually.

Communications maintenance and inspection costs are normally a component of maintenance agreements covering communications systems entered into at the time of installation. In *WFA I*, the complainant proposed and the Board accepted an annual communications system maintenance cost of two percent of original purchase cost. Based on Mr. Davis's experience this percentage is reasonable, and it has been applied to the IRR communications-equipment acquisition costs developed by IPA Witness Victor Grappone. The result is an annual cost of contracted repairs to IRR communications facilities of $119,999. *See* e-workpaper "MOW Costs.xls," tab "Annual MOW Expenses."

Bridge Inspections. As described earlier, the IRR B&B Supervisor/ Inspector performs basic bridge inspections as part of his duties, including annual inspections of all bridges. Since all IRR bridges will be newly constructed, the IRR's B&B Supervisor/Inspector can perform all the annual bridge (and culvert) inspections. Therefore, no contract bridge inspection is required.

Building Maintenance. All IRR buildings are new at operations start-up so only occasional routine maintenance is required.[48] Other than general plumbing and electrical repairs over time, HVAC systems generally require semi-annual inspections and/or maintenance which are performed by contractors (as is occasional outside maintenance). Mr. Davis developed an annual cost of $126,433 for contract building maintenance, which is based on two percent of the total building cost. *See* e-workpaper "MOW Costs.xls," tab "Annual MOW Expenses"

ii. Unplanned Contracted Maintenance

Snow Removal. IRR yards and main tracks may require occasional snow removal. Most snow removal activity is performed by IRR field maintenance personnel who are not normally as busy in the winter as during the remainder of the year in the areas where snowstorms are likely to occur.

All main track switches are equipped with switch heaters. The ballast regulator is equipped with a snow blower and can be used to blow out snow-laden switches and trackage as needed; the regulators are run by Smoothing Gang members who are not as busy in the winter in those areas. Snow removal from roadways and parking lots, primarily at the Lynndyl headquarters and the Milford and Provo crew-change locations and fueling yard areas, will be contracted out; it is better handled by contractors because it is uneconomical to

[48] UP provided no information in discovery concerning building maintenance costs

employ extra in-house staff and own infrequently used, specialized equipment necessary to perform this work.

UP provided no data on snow removal costs in discovery. Based on the fact that the IRR has only three significant snow-plowing locations (Provo, Lynndyl, and Milford) and the availability of the in-house MOW forces' backhoes to clear heavy snow form parking areas, Mr. Davis has allocated $10,000 per year to perform contract snow removal. *See* e-workpaper "MOW Costs.xls," tab "Annual MOW Expense."

<u>Storm Debris Removal</u>. There may be infrequent occasions where severe winds bring down trees or scatter debris on the right-of-way, as well as ice storm damage during winter conditions. Depending on the severity and extent of the damage, outside contractors will be called upon to clean up debris. In-house MOW forces will be available to assist, but the IRR will not staff up to respond to such occasional potential events. Once again, UP provided no information in discovery on storm debris removal costs. Based on his experience, Mr. Davis provided $15,000 annually to cover the cost of this activity. *See* e-workpaper "MOW Costs-Final.xls," tab "Annual MOW Expense."[49]

<u>Building Repairs</u>. As described earlier, all IRR buildings are new. Nevertheless, the buildings may require occasional unplanned repairs. Typical

[49] Neither snow nor storm debris removal costs are significant when compared to other MOW activities. The cost estimates provided in the text are reasonable given the inability to realistically plan or forecast an annual amount covering activities that are based solely on unpredictable weather.

occurrences include storm damage, water and sewer line repairs, electrical failure, HVAC repairs, *etc.* In Mr. Davis's experience, unplanned annual costs of building maintenance generally are subsumed within the general building maintenance costs described above.

iii. <u>Large Magnitude, Unplanned Maintenance</u>

<u>Derailments</u>. A new railroad such as the IRR, constructed to modern standards, is less likely to experience a major track-caused derailment than the older track structure and sub-grade of the UP lines being replicated. Nevertheless, over the IRR's ten-year life under the DCF model, derailments may occur. Removing equipment and lading and restoring the track structure after a major derailment usually requires heavy specialized equipment. Today, few railroads use in-house staff to clear and repair track after such derailments without assistance from a contractor, and most Class I railroads no longer employ auxiliary forces dedicated to derailment response. The same is true for regional and short-line railroads, which are even less able to afford this stand-by resource. Almost all rail carriers rely primarily on contractors to respond to such occurrences because it is not cost-effective to support a separate complement of employees and heavy equipment on stand-by to deal with infrequent, major derailments.

According to the FRA Accident Reports for UP, UP incurred no damage from derailments on the lines replicated by the IRR in the last twelve months This information is confirmed in e-workpaper "IRR Derailment and Clearing Wrecks xlsx." Given the IRR's brand-new rail network at start-up (including the fact that it did not replace older, jointed rail with CWR but starts operations with CWR on all of its main tracks), and considering that it moves only complete trains with minimal local industry switching, the IRR certainly should not incur more derailments than the real-world UP does on these lines.

To be conservative, IPA's experts applied a cost for derailments and clearing wrecks on a per-mile basis, using data in UP's most current (2011) R-1. UP's 2011 R-1 shows an amount for clearing wrecks of $611 per route mile for the UP system. When applied to the IRR's route miles, this yields a total cost of $106,897 for derailments and clearing wrecks. *See* e-workpaper "IRR Derailment and Clearing Wrecks.xlsx."

Washouts. Again, a new railroad roadbed/track structure is not as prone to washouts as older, real-world railroad roadbed that may have experienced previous water-related damage. Nevertheless, washouts may occur – for example, when a culvert through the sub-grade becomes blocked, preventing the flow of water. This blockage can be caused by melting snow or severe rainstorms that cause heavy runoff to threaten the integrity of the right-of-way; floating debris on the upstream ends of some culverts also could prevent culverts from serving their intended purpose

Based on the relatively arid territory in which much of the IRR route is situated and the IRR's total route miles, the average annual cost of washout repairs would not exceed $50,000 and could be much less. This cost includes furnishing and placing up to 1,000 tons of rip-rap at a material cost of $30 per ton

Other related work would be performed by local field forces (including the backhoe, excavator and smoothing crew) as needed *See* e-workpaper "MOW Costs xls," tab "Annual MOW Expenses."

Ditching. Since the IRR starts operations with a newly-constructed roadbed/track structure with clear, open ditches, little ditching is likely to be required. In-house equipment including the excavator and backhoes are available to handle any necessary repairs or ditch clearing. However, to be conservative, Mr. Davis accounted for the possibility of having to contract out some specialty service totaling $15,000 annually should the IRR's in-house equipment be insufficient to handle needed ditch clearing.

Environmental Cleanups. The IRR operates locomotive inspection and servicing or repair facilities at N. Springville (near Provo) that might be a source of inadvertent discharge of environmentally hazardous materials. In addition, IRR transports some hazardous commodities over several of its lines. An infrequent environmental cleanup could occur if hazardous commodities are released during a derailment. Derailments are less likely to occur on the IRR than on a Class I railroad such as UP because the IRR begins operations in late 2012 over a brand-new track structure that includes CWR on all of its main tracks. It will not incur costs associated with situations where CWR replaced jointed rail that caused ballast and sub-grade problems due to compression, which increases the risk of track-caused derailments

UP provided no information on the cost of environmental cleanups in discovery. However, the IRR is providing protective drip pans at the location where locomotives are fueled at its N. Springville locomotive facility. This insures that oil emissions from idling locomotives are contained. At N. Springville, a total of 180 track feet are protected by drip pans, whose installation cost (including related pipes) is included in the IRR's road property investment costs described in Part III-F below. The heavy duty drip pans last for many years, so there are no associated annual maintenance costs for them.

f. <u>Contract Maintenance</u>

Program maintenance, such as rail and tie renewal programs. is performed by contractors and is capitalized in the DCF model. Consistent with the Board's SAC precedent and Class I railroad practice, the following more frequent MOW work that is contracted out is also capitalized rather than being included in operating expense.

i. <u>Surfacing</u>

The IRR employs one field smoothing crew which performs day-to-day surfacing of the track to correct rough spots. In addition, heavy-tonnage track subjected to the high axle loadings of unit coal and other trains needs to be surfaced on a regular basis (once every three years) to prevent it from deviating from acceptable standards. Consistent with standard railroad practice as well as the Board's approach in recent SAC cases, including *WFA I*, this surfacing is performed by a contractor and it is capitalized in the DCF model because it is in the nature of program work.

ii. Rail Grinding

As noted earlier, {

} The rail and switch grinding frequencies developed by Mr. Davis, as described in the preceding section, were provided to IPA Witness Thomas Crowley for purposes of capitalizing them in the DCF Model.

iii. Crossing Repaving

Again, as discussed earlier, UP is assumed to follow standard industry practice and capitalize road crossing renewal in conjunction with track and signal program work. The IRR follows the same approach. The crossing repaving frequencies developed by Mr. Davis also were provided to Mr. Crowley for purposes of capitalizing them in the DCF Model.

iv. Bridge Substructure and Superstructure Repair

Bridge life expectancy under UP's depreciation accounting is 60 years. This life expectancy generally reflects the longevity and stability of bridge superstructure and substructure components.[50] Nonetheless, unexpected minor repairs on a bridge substructure and superstructure will be required from time to time. The likelihood that steel and concrete repairs will be required is negligible

[50] The IRR's bridge replacements are accounted for in the DCF process.

given that the IRR structures are new in year one and enjoy a life expectancy of over half a century.

However, to be conservative. Mr. Davis assumed having to repair or perform contract maintenance on two of the IRR's 48 total bridges annually, or about four percent per year (equating to almost 42 percent of all bridges over the 10-year DCF period, which is a very high number), as a result of unexpected events such as being struck by vehicles or high water, resulting in having to repair/replace bridge components or make pier repairs. Mr. Davis assumed a contractor's crew of four working over a period of two days ($2,000) plus material ($1,000) and equipment ($1,000) for the two emergency repairs or a total of $8,000 annually. This cost is expensed.

g. **Equipment**

The IRR's in-house MOW forces require a variety of equipment to perform their duties, some of which has been described previously. MOW equipment requirements and costs (other than for small tools. whose cost is included as a materials additive to the base compensation cost of each employee) are described below. The costs of all of this equipment are detailed in e-workpaper "MOW Costs.xls," tab "Annual MOW Equipment Cost."

i. **Hi-Rail Vehicles**

Each of the IRR's two field track crews is equipped with a hi-rail truck which provides transportation of the crew and is equipped with the tools necessary for the crew to perform its duties. This crew-cab vehicle, which is appropriate for the tasks it is intended to accomplish, comfortably seats a Foreman and two Track Workers. Its hi-rail gear provides the versatility required of maintenance forces to gain access to the track and carry out their duties, particularly on the portions of the IRR network where traffic density is high.

For example, if a track crew cannot access the track at a particular location due to imminent train arrival, the crew travels by road to a point where a dispatcher can provide positive protection for the crew to get on the track. Alternatively, if a crew is on the track and it cannot remain or proceed due to an oncoming train, the hi-rail vehicle is removed until the train clears the CTC block or, in non-signaled territory, passes the track crew's location, and then either returns to the track or moves. by road. to another point where (with authority from a dispatcher) it again obtains the authority to gain access to the track.

Each of the hi-rail vehicles is equipped with a boom crane and overhead racks. They allow the crew to load 39-foot rails, frogs, switch points, switch ties, cross ties and other materials necessary to perform track maintenance.[51] The vehicle also is equipped with a hydraulic system providing the capability for operating portable tamping tools (2). an impact wrench (1), a rail saw (1), a rail drill (1), a spike hammer or driver (1), a spike puller (1), *etc.*, which

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[51] It should be noted that the heavier materials such as longer weldable frogs would be handled by the Prentice Loader, working in conjunction with the track crew. This "teaming" aspect of equipment utilization moderates the size required for the track crews' trucks.

are included in the complement of tools carried on the vehicle.[52] Based on information obtained from hydraulic tool vendors, Mr. Davis determined that the IRR's cost to equip a gang truck or Assistant Roadmaster truck with these tools is $16,300 per vehicle. *See* e-workpaper "MOW Costs-xls," tab "Annual MOW Equipment Cost."

While the B&B crew hi-rail truck is equipped with a different type of crane than the track crew hi-rail trucks, the B&B truck costs approximately the same and is similarly outfitted with hydraulic and hand tools.

Other MOW personnel are assigned smaller hi-rail vehicles. These include the Roadmaster and Assistant Roadmasters, Signal Maintainers and welding crew. The Assistant Roadmasters' vehicles also are equipped with a hydraulic pump and tool set similar to the system in the track and bridge crew vehicles (an Assistant Roadmaster may not carry the full complement of hydraulic tools every day on his truck to reduce weight, in all likelihood these trucks would carry the impact wrench and possibly the spiker on a daily basis, and the other complement of hydraulic tools as necessary). The HQ Engineering/MOW staff also is assigned hi-rail vehicles as described in Part III-D-4-f. In addition, the IRR equipment roster includes one trailer assigned to move the excavator to job sites as well as a Prentice Loader (material handling) truck. A trailer is also provided to

[52] The hydraulic systems on the track crew's hi-rail trucks can perform more functions than an air compressor. Air tools largely have been replaced by hydraulic tools supplied to each crew and each Assistant Roadmaster.

host the backhoes assigned to each track crew's territory. These vehicles are used to deliver equipment, tools and materials to the field track and other crews.

Smaller hi-rail vehicles driven by supervisory employees are intended essentially for their transportation and that of others who may accompany them together with some capability for small material transport. Vehicles rated three-quarters to one ton are suitable. Hi-rail vehicles assigned to Assistant Roadmasters, Signal Maintainers and Welders not only provide transportation of employees, but are equipped with service bodies for transporting equipment, tools and parts. Here, too, vehicles rated three-quarters to one ton are appropriate. The rating specification accommodates a wide variety of vehicle manufacturers and body configurations.

As shown in e-workpaper "MOW Costs.xls," tab "Annual MOW Equipment Cost," IRR's total hi-rail vehicle cost is $1.31 million. The $1 31 million number for hi-rail vehicles excludes the Prentice Loader and regular and rotary dump trucks, which adds $0.63 million to the hi-rail vehicle costs, increasing the total to $1.93 million. Addition of the conventional vehicles (cars and trucks) brings the total vehicle cost to $2.25 million.

ii. <u>Equipment for Track and Related Work</u>

IRR field crews responsible for track maintenance (including the track crews, smoothing crews and welding crews) are assigned other specialized equipment needed to perform their tasks, as described below.

Rail Drills. Rail drills are needed by field track crews for drilling holes in new replacement rail when bolted joints are installed by replacing a rail that is found to be defective through electronic testing or visual detection. Each track crew and each Assistant Roadmaster is assigned one hydraulic rail drill as part of the hydraulic tool set on their truck.

Rail saws. Rail saws are used by field MOW personnel to crop torch-cut rail ends or shorten existing rail ends when joints are to be installed. Providing smooth rail-sawn ends meets FRA requirements for the IRR track classes, as no torch-cut rail is allowed in Class 4 track. Each hydraulic tool set contains one rail saw.

Impact Wrenches. Each track crew and Assistant Roadmaster also is outfitted with an impact wrench in the hydraulic tool set on their hi-rail vehicle. This piece of equipment is used to loosen and tighten joint bolts where joints are present in the track infrastructure. The impact feature of these tools is especially effective where a nut and bolt are rusted or seized and manual attempts to loosen them might prove unsafe. The impact wrench also is equipped with calibration capability so that applied force can be set in accordance with manufacturer's specifications.

Tamping Tools. Each field track crew is equipped with two small, hand-held tampers. Major surfacing programs are incorporated into major rail and tie renewal projects and are performed by outside contractors with large tamping equipment. However, additional spot surfacing may be required to smooth joints, switch and railroad crossing frogs, switch points, bridge approaches, at-grade crossing approaches, local spots on the high sides of curves, and as curves move (out) in the spring and (in) during the fall. This spot power tamping (versus hand tamping with ballast forks) minimizes speed restrictions due to track conditions. Thus, each track crew is equipped with a set of tamping tools powered by the hi-rail vehicle's hydraulic system.

Spike Hammers (Drivers). Each set of hydraulic tools is accompanied by a single spike hammer or driver which drives regular cut spikes into wooden ties or lag screws into timber headers (or planks) in at-grade, highway-rail crossings. These power tools reduce manual labor associated with spike installation.

Spike Puller. Lastly, each set of hydraulic tools includes a single spike puller, which again reduces the amount of manual labor associated with spikes, only this time involving the removal of existing spikes from timber ties.

Tamper and Ballast Regulator. The smoothing crew is equipped with a modern high-speed tamper with switch-tamping capability to perform spot tamping work and a ballast regulator which is required to move ballast, restore the roadbed section and shoulder ballast, and sweep the track. The crew performs virtually all of the spot tamping, lining and surfacing required to maintain proper track line and surface. The initial capital cost of the tamper is ${

} and indexed to a 4Q12 price of ${ },

while the cost of the ballast regulator is ${ }

and indexed to a 4Q12 price of ${ }. The source of these initial capital costs is UP discovery document "Equipment Roster xlsx" produced in discovery in Docket No. 42127. The calculation of the amounts shown is detailed in e-workpaper "Equipment and Contract Service.xlsx."

<u>Grinders</u>. The welding crew is equipped with a complement of rail grinding equipment, including straight and profile grinders. This equipment is used to grind rail to the designed profile at specific locations. The IRR's welding crew uses the Thermite welding process to eliminate joints created temporarily in CWR where a section of rail is replaced. It also restores, by welding, rail ends which are battered, chipped or crushed, switch and rail crossing frogs, and switch points. Once welding is complete, the weld zone needs to be ground to conform with the rail profile adjacent to the zone. In addition, the crew slots insulated rail joints found in the vicinity of switches, railroad crossings and bridge approaches. The joints require slotting as the railhead flow, under traffic, moves to span the joint gap. If the flow is not checked by slotting, it eventually breaks off, causing the rail end to chip or may cause signal failures.

Each of the two track crews also is equipped with a straight grinder in connection with its occasional rail repair work. The cost of straight grinders used by the track crews and one set of grinding equipment used by the welding crew is included in the cost of the welding or track crew trucks

<u>400-Amp Welders</u> The welding/grinding crew also is equipped with a 400-amp welder, mounted on the crew's hi-rail truck. This smaller welding

tool provides the crew with the needed flexibility to access a work site regardless of track location. The cost of one 400-amp welder is $12,000, which is included in the truck cost of welders.

<u>Oxy-Acetylene Welders</u>. Finally, the welding crew is equipped with welding and cutting torches and fuel cylinders. The total cost of oxy-acetylene equipment used by the welding crew is $750.

<u>Track Hoe</u> The IRR's MOW equipment roster includes one backhoe track excavator (also known as a "trackhoe"). This machine, which is operated off-track, is also available to assist the two backhoes. It is used primarily in clearing slide areas, installing culverts, and other miscellaneous excavation work. It is also occasionally needed by the field track and signal forces. The trackhoe is effective in specialized ditching purposes (such as improving drainage in the vicinity of at-grade highway/rail crossings and placing signal conduit) and in spot excavating. It also can clear debris and beaver dams lodged at culverts and bridges when equipped with the optional grapple attachment. The total cost of the trackhoe on {   } which was indexed to a 4Q12 price of ${   } based on UP's "Equipment Roster.xls" provided in discovery in Docket No. 42127 (and included in the e-workpapers for Part III-D) *See* e-workpaper "MOW Costs.xls." tab "Annual MOW Equipment Cost."

<u>Backhoes and Dump Trucks</u>. Each of the two track crew territories is equipped with a small rubber-tired backhoe, dump truck, and trailer to transport the backhoe. These additional support vehicles supplement the equipment

described in the preceding sections and are available to the track and smoothing crews on an as-needed basis The cost of this equipment is ${ }.

Details (including sources) concerning the costs of all equipment items described above are provided in e-workpaper "MOW Costs.xls," tab "Annual MOW Equipment Cost."

iii. <u>Work Trains</u>

Contractors provide all equipment (except locomotives) necessary to support large track programs. As explained in Part III-C-2-c, the IRR has spare road locomotives that are available for occasional use in contractor work-train service, as needed.[53] Those locomotives also can be used to move the occasional car of ballast, *etc* , needed by the IRR's field MOW track forces.

The IRR does not need any separate work-train equipment of its own. Spot ballast is purchased by the carload, with the IRR simply moving the carload supplied by the vendor to the location where it is needed. Spot ties can be moved to the location where they are needed by the Prentice Loader truck. Based on Mr. Davis's personal knowledge and observation. many railroads (including Class I's) are now using this approach (depending on the complexity of the project) and no longer employ fleets of work-train equipment to be used by in-house MOW forces.

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[53] For example, CWR is laid in 1,600-foot strings from a rail train of specialized flatcars that requires a locomotive. Other contractor equipment items such as a spike pullers, nipper-spikers, tampers and ballast regulators are self-propelled and do not require motive power

The IRR does need to store or hold work-train equipment temporarily, for either contract jobs or cars of material supplied by outside vendors Mr. Davis has provided a 1,000-foot MOW equipment storage track for this purpose at the IRR's Lynndyl yard. This track also can be used for temporary storage of some of the IRR's larger hi-rail equipment as well as contractor on-track equipment.

h. Scheduling of Maintenance

Spot maintenance work carried out by the IRR's MOW crews is not scheduled in planned maintenance windows. Although much of the work is routine, some occurrences are unplanned but require immediate attention and do not reflect the normal, routine approach to spot maintenance designed by IPA's Witness Davis. Given the flow of traffic on the railroad, scheduling spot MOW work must be fluid and flexible to the extent feasible given specific maintenance needs. Although the IRR's field MOW crews (including signal maintainers) are responsible for all routine maintenance work that occurs on the IRR right-of-way, they also address conditions requiring immediate remedial action such as broken rails, broken joint bars, down or malfunctioning crossing signal gate arms, *etc* Any condition requiring remedial action that cannot be met by the MOW field crews is referred to the proper authority, usually the Roadmaster or an Assistant Roadmaster, who calls in needed resources. In the meantime, field MOW forces provide flag protection in such situations.

An IRR field maintenance crew may perform different work on succeeding days. In addition to regular duties, which the Foreman of each crew will have planned, the Roadmaster or other supervisor will assign specific tasks which will be referred to a particular crew or a combination of crews. The tasks assigned on a particular day will depend on the expected rail traffic (train frequency) and thus the work window available. A particular track crew may be able to move on track by hi-rail vehicle directly from its base to a location requiring, for example, the change-out of a defective rail which has precipitated a temporary slow order, thereby restricting the speed of trains. Another crew could be assigned a similar task but, because of a differing circumstance with respect to train location and work window, must move by road (in its hi-rail vehicle) closer to the task's location, and then obtain a work window from a dispatcher.

Other activities can be scheduled more easily. For example, following the passage of an ultrasonic rail test car, some rails will require immediate removal and joints must be Thermite-welded. Since the testing is planned, the replacement of defective rails can be scheduled. The field track crew, assisted by a welding crew, can then be in position to replace the defective rails and weld them.

Ultimately, the IRR field MOW crews are not relying on specific maintenance windows that are planned substantially in advance of needed work. Instead, crews plan their days around specific information concerning the number of trains expected that day in their territory and the work that needs to be completed. No scheduled maintenance would be performed during the IRR's peak traffic period, which occurs in the winter (early March) Only emergency repairs will be performed during that period.

5. **Leased Facilities**

The IRR has no leased track facilities.

6. **Loss and Damage**

The IRR's annual loss and damage cost equals $58,667 for the first full year of operations. This cost was developed based on UP's actual 2011 loss and damage per ton for the commodities moving on the IRR, multiplied by the number of tons of each commodity moved on the IRR's replicated parts of the UP system in the Base Year, then multiplied by the traffic group ton ratios by commodity group to reflect IRR trains moving in the first full year of operations.[54] *See* e-workpaper "IRR Loss and Damage.xlsx."

7. **Insurance**

The standard practice of large railroads is to self-insure against potential liability except for catastrophic risks. The IRR also self-insures against most types of claims, and obtains insurance at competitive rates to cover catastrophic loss and Federal Employers Liability Act exposure.

[54] For cross-over traffic, the IRR's share of the loss and damage payments was calculated on the percentage of the IRR's car-miles to UP's total car-miles by two-digit STCC code.

Insurance expenses for the IRR were calculated using the experience of the P&W, a publicly traded regional railroad, for 2008 through 2011 The result is an IRR insurance expense of 3.89 percent of operating expenses. *See* e-workpaper "IRR Insurance.xls."

8. <u>Ad Valorem Tax</u>

The IRR operates only in the state of Utah. To develop ad valorem taxes, the amount of tax that UP paid per route mile in 2011 was calculated for its route miles in Utah. These amounts were then applied to the IRR's route miles. Details of the calculation are shown in e-workpaper "IRR Ad Valorem.xls."

9. <u>Calculation of Annual Operating Expenses</u>

The IRR's operating expenses for its first year of operations (November 2, 2012 to November 1, 2013) are summarized in Table III-D-1 above. The methodology used to calculate these expenses for input into the DCF model is summarized at pp. III-D-1 to 2 above.

III-E Non-Road
Property Investment

III. E. NON-ROAD PROPERTY INVESTMENT

1. Locomotives

The IRR leases all of its locomotives. The annual locomotive lease cost is included as an operating expense, as described in Part III-D-1 above.

2. Railcars

The IRR also leases all of its railcars. The annual railcar lease cost is also included as an operating expense, as described in Part III-D-2 above.

3. Other

Most of the IRR's other equipment, including company vehicles, maintenance-of-way equipment such as hi-rail trucks, radios, and telephones (*see* Parts III-D-3 and III-D-4 above) are purchased. Computers and related hardware are also purchased. The IRR's information technology and computer system needs, and the associated capital investment, are described in Part III-D-3-c-iv above. The purchase prices of these items are annuitized and included in the IRR's operating expenses.

The IRR does not operate over any joint facilities owned by other carriers. UP and the URC operate over approximately two miles of IRR trackage in the Provo area in connection with the interchange of certain coal trains with the IRR.

III-F Road Property
Investment

III. F. ROAD PROPERTY INVESTMENT

IPA's SARR road property investment evidence is being sponsored by Stuart Smith (land acquisition costs), Harvey Stone (engineering and construction costs), Timothy Crowley (grading/roadbed preparation costs), Victor Grappone (communications and signals costs), and Phillip Burris (the cost of land grants and easements). These witnesses' qualifications are set forth in Part IV.

The IRR replicates existing UP rail lines in the State of Utah, including portions of the Sharp and Lynndyl Subdivisions extending between Provo on the northeast and Milford on the southwest. As discussed in Part III-B, the IRR replicates a portion of one of UP's transcontinental intermodal and general freight corridors.

The IRR's road property investment costs are summarized in Table III-F-1 below.

TABLE III-F-1 **IRR ROAD PROPERTY INVESTMENT COSTS** (millions)	
Item	**Investment**
1. Land	$ 15.8
2. Roadbed Preparation	76.4
3. Track	174.7
4. Tunnels	0.0
5. Bridges	13.0
6. Signals, Communications & Other Equipment	23.1
7. Buildings & Facilities (including Fueling Facilities)	8.3
8. Public Improvements	4.1
9. Subtotal	$ 319.6
10. Mobilization	$ 7.6
11. Engineering	29.9
12. Contingencies	33 7
13. **Total Road Property Investment Costs**	**$ 386.7**

1. Land

The IRR's land acquisition costs were developed by Stuart A Smith of MillenniuM Real Estate Advisors, Inc. Mr. Smith has over 25 years of real estate appraisal experience. He has prepared land acquisition cost testimony in prior STB maximum-reasonable rate cases, including *AEPCO 2011*, *Seminole* and *Wisconsin P&L*.[1] In addition. Mr. Smith prepared the SARR land acquisition costs in Docket No. 42127. which were accepted by UP. Here, Mr. Smith has

[1] *Wisconsin Power & Light Co. v. Union Pac. R.R.*, 5 S.T.B. 955 (2001) ("*Wisconsin P&L*").

updated his report in Docket No. 42127 to reflect the IRR's smaller route mileage of 174.96 miles. However, as Mr Smith explains in his report, the market for land in the replicated area has not materially altered since he prepared his initial report in 2011. Thus, Mr. Smith's valuation remains consistent with the prior valuation accepted by UP. Mr Smith's extensive qualifications in the real estate appraisal field are set forth in Part IV.

The IRR's route starts near the south end of a midsized city, Provo, UT. The IRR quickly passes out of Provo, and the balance of the route, more than 95 percent of the territory traversed by the IRR, is rural or otherwise low density. Mr. Smith's land acquisition report ("Report") necessarily focuses in more detail on the Provo area, where land acquisition costs per acre are higher.

Mr Smith's methodology and his determination of land acquisition costs for the IRR are set forth in his Report, which is included as e-workpaper "IRR Land Valuation Report.pdf." A summary of Mr. Smith's land valuation determinations is provided in Table III-F-2 below.

TABLE III-F-2 IRR LAND ACQUISITION COSTS	
Property Type	**Cost (millions)**
ROW – Fee Simple	$ 15 4
Locomotive Shop	3 2
Microwave Towers	0.004
Land Grants & Easement	- 2.8
Total	**$ 15.8**

a. **Right-of-Way Acreage**

Mr. Smith established a fee simple, right-of-way value of $15.4 million for the IRR, which includes 2,108 acres. This figure does not reflect the reduction in costs attributable to acreage acquired through grants and easements, which are included in the 2,108-acre total. Consistent with established Board precedent, the right-of-way has an average width of 100 feet in most areas, plus additional width at various locations as needed. *See Xcel I*, 7 S.T.B. at 667. However, an average width of 75 feet was used in industrial, commercial, and residential areas in and around Provo as indicated in Mr. Smith's Report. This approach has also been accepted in prior Board decisions. *See Duke/CSXT*, 7 S.T.B. at 472-73; *Wisconsin P&L*, 5 S.T.B. at 1018; *West Texas Utilities*, 1 S.T.B at 702.

b. Yard Acreage

The IRR has no large yards. It has two small interchange yards at Lynndyl and Milford that require no extra acreage. The IRR has one locomotive repair facility located in the Provo area on the Sharp Subdivision. This facility requires 19.5 acres at a cost of $3.17 million. Details of the locomotive shop acreage calculations are included in e-workpaper "Building Site Development Costs.xls."

c. Microwave Tower Acreage

The IRR has eight microwave tower locations situated on or near its right-of-way (one microwave tower is co-located at the locomotive shop). While the Board has approved the use of three acres per microwave tower site, *see TMPA*, 6 S.T.B. at 699, IPA's engineers observed that various communication tower sites observed on or near the IRR's right-of-way were far smaller than three acres. Indeed, it appeared that the typical site uses no more than half an acre. Photos of several sites showing the fenced perimeter are included as e-workpapers in the "Photos" folder. *See, e g*, e-workpaper "100-3490. P422020a.pdf." However, to be conservative, Mr. Smith's land valuation included one acre per microwave site. Thus, the IRR requires eight acres for microwave towers at a total cost of $4,000.

d. Property Values

Consistent with recent Board decisions, property values were determined by evaluating the land adjacent to the UP right-of-way being replicated by the IRR. "The land along the ROW is a prime indicator of a ROW's value and has been used in all prior SAC cases." *Duke/CSXT*, 7 S T B. at 473; *Duke/NS*, 7 S.T.B. at 169. The total cost of the property necessary for construction of the IRR is $18.6 million, excluding land grants and easements. The methodology used and analysis developed in determining the acquisition cost is summarized below.

i. **Methodology**

Vacant land is best appraised using the sales comparison approach. *Xcel I*, 7 S T.B. at 668. This method provides a price indication by comparing the subject properties to similar properties that have sold recently, applying appropriate units of comparison, and making adjustments based on the elements of comparison to the sale price of the analogues. Generally, the sales in the rural areas served by the IRR are analyzed using price per acre as the key determinant to establish a value estimate. Land sales in the Provo area were appraised using a variety of measures, such as cost per square foot and cost per acre, but all values were analyzed on a cost per acre basis in order to develop a final acquisition value.

In valuing the IRR's ROW, Mr. Smith utilized a method that is consistent with traditional and accepted real estate practices applied to all types of rights-of-way when a corridor value is not required. Land sales in the vicinity of a right-of-way are examined to develop across-the-fence ("ATF") land prices. *See id.*, 7 S.T B. at 669 (supporting ATF values). Land sales adjacent to or near the UP rail lines being replicated form the basis for the IRR's real estate acquisition cost estimate.

Mr. Smith acquired land sale data from various licensed appraisers and other sources. Utah is a non-disclosure state. Mr Smith consulted with those local real estate appraisers in developing his analysis.

ii. <u>Application</u>

Mr. Smith inspected most of the IRR right-of-way by driving near the replicated UP right-of-way Areas where physical inspection was not possible were reviewed using other data such as topographic maps and satellite imagery. Mr Smith details his various inspection techniques in his Report (e-workpaper "IRR Land Valuation Report.pdf").

These inspections aided in Mr. Smith's determination of the highest and best use of the property along the ROW, the specific breaks between land use segments, and the overall impression of an area relevant to potential value Such inspections are inherently of more value in populated areas than in the isolated rural areas where land patterns are consistent for long stretches. Consequently, Mr. Smith concentrated his inspection efforts in the Provo area.

After completing his inspections, Mr. Smith subdivided the ROW into various segments based on the land use types he identified. In particular, Mr. Smith utilized ten different land use categories: Residential, General Commercial, Open Space/Range, Open Space/Agricultural, Open Space/Desert, Open Space/Public, Open Space/General Mountainous, Industrial/Warehouse, Small Town, and Retail. Mr. Smith then examined comparative sales data for each segment and assigned a per acre value to the segment. The analysis was performed assuming a fee simple ownership interest in property in undeveloped and unimproved condition. The appraisal includes the right-of-way for the tracks, the locomotive shop and other facilities shown in Exhibit III-B-1 and as described above.

iii. Costing

The purpose of the costing process herein described is to provide the most probable hypothetical cost to acquire a fee simple interest in the right-of-way for the railroad lines being constructed by the hypothetical IRR. Land was evaluated in its undeveloped condition, without consideration of adjacent ownership boundaries, abutting ownership, or severance damages, with values determined as of November 2, 2012.

The IRR system is composed of 174.96 miles of railroad right-of-way, covering 2,108 acres. The IRR's land requirements include one locomotive shop facility as described above. As explained above, the right-of-way width varies in different areas based on inspection and other evaluations of the existing UP rights-of-way being replicated, and Board precedent. An average width of 100 feet was used in rural areas. An average width of 75 feet was used in industrial, commercial, residential, and suburban areas near Provo Thus, if an area was classified as General Commercial or Industrial/Warehouse, a right-of-way width of 75 feet was typically used

No assemblage factor was added to Mr. Smith's calculations as UP's predecessors built all of these lines more than 100 years ago, and UP has not asserted that it incurred any assemblage factor for these properties.

e. **Easements and Land Grants**

IPA Witness Phillip Burris has examined the UP's valuation maps, easements and land grants that underlie the route being replicated by the IRR. His analysis of these documents indicates that over 1,574 acres of the IRR's right-of-way were obtained through land grants or easements. Land grants were shown to be reversionary based on data provided by UP, and historically land grants were given to railroads at no cost. *See* e-workpaper "IRR Opening Land xlsx," tab "100 ft ROW" and supporting workpaper folder "Land Grants."

In *Nevada Power I*, the ICC held that land used for a right-of-way that reverts back to the original owner upon the owner's exit from the market is not a fungible asset owned by the incumbent, and that requiring the new entrant to pay for such property is a barrier to entry.[2] As the ICC explained:

> Land for right-of-way purposes can be separated into two distinct classes: (1) land owned in fee simple and convertible to other purposes; and (2) land not owned. The land owned by incumbents is a fungible asset, having an opportunity cost of its best alternative use. This cost is faced equally by both incumbents and entrant Thus, its inclusion in SAC is proper Land over which a railroad operates, but does not own, is

[2] In *Nevada Power I*, the ICC required that the shipper purchase property that the railroad had acquired through a land grant, but it did not address whether such property was actually owned by the railroad or whether there was reversionary interest

> not a fungible asset. The incumbents encounter no opportunity cost on such land, since it is forfeited upon exit. Requiring a new entrant to purchase and earn an appropriate return thereon imposes an entry barrier.

Nevada Power I, 6 I C C. 2d at 54-55.

The US Land Grants at issue here meet the reversionary requirements of *Nevada Power I*. Thus, IPA has excluded the cost to acquire land where UP or its predecessor(s) did not incur such costs. Indeed, the documents provided by UP in discovery in this proceeding demonstrate that US Land Grant properties used in the right-of-way in Utah revert back to the original owner upon retirement. *See* e-workpaper "DRGW-property-schedules pdf."

UP did not provide any cost data for the relevant easements. Nor do any of the US Land Grant documents suggest that UP has any fee simple interest in the property excluded from the IRR's land investment costs. However, on Reply in Docket No. 42127, UP did provide a workpaper "UPSP.pdf," which purports to show that UP paid for the land grants when it merged with the Southern Pacific. However, the workpaper simply shows an allocation of the merger costs to all land purchased. It does not tie those costs specifically to the lines being replicated by the IRR, and it does not suggest that UP paid for any land grants at all. Mr. Smith has, therefore, subtracted the relevant acres and costs from his fee simple land valuation, which reduced Mr. Smith's valuation total by $2.8 million.

f. **Conclusion**

Based on the investigation and analysis undertaken by Mr. Smith, the cost of the fee simple estate and easements in the ROW needed for the IRR's lines as of November 2, 2012, subject to all stated assumptions and limiting conditions delineated in Mr. Smith's Report, is $15.8 million

2. **Roadbed Preparation**

IPA's expert engineering witness, Harvey Stone assisted by IPA Witness Timothy Crowley, developed the IRR's roadbed preparation costs in a manner generally consistent with prior Board decisions including *AEPCO 2011*, *WFA I*, *AEP Texas*, *Xcel I*, *Duke/CSXT*, *Duke/NS*, and *Carolina P&L*. Their qualifications are set forth in Part IV.

The terrain traversed by the IRR is largely constant over the entire route. The territory between Provo and Lynndyl is similar in grading difficulty to the "high plains" areas traversed by the SARRs in Powder River Basin ("PRB") coal rate cases. The territory is easily graded because some of the land rests on what used to be part of the Bonneville Lake system and the balance of the territory is on alluvial and colluvium soils that require no special equipment, blasting, scraping or other costly and more complicated activities. There are few trees, and much of the land is covered in scrub grasses. Some of the land is grassland that is used for grazing

The portion of the IRR between Lynndyl and Milford lies in the Great Basin. This area is generally flat and light on vegetation. The territory is relatively dry as it lies between various mountain ranges. In other words, it presents no more of a grading challenge than the Provo to Lynndyl segment.

To illustrate the similarities between the IRR territory from Provo to Lynndyl and Lynndyl to Milford and that of the PRB, Mr Stone developed a series of maps based on the USDA's shallow excavation data. These maps, included as e-workpaper "Shallow Excavation Comparison.pdf," provide a color-coded comparison of the IRR route and the portion of the PRB traversed by the UP/BNSF "Joint Line" and UP's Powder River Subdivision that connects with the Joint Line. These maps demonstrate that the degree of difficulty and the materials encountered are sufficiently similar that the application of unit costs from PRB rail projects is reasonable.

In addition to the comparison to the conditions in the PRB, the USDA maps have direct application to the difficulty of excavation work that the SARR will encounter on the route, especially for common earthwork. The USDA shallow excavation maps account for surface conditions up to six feet below the surface. The IRR's average excavation depth is only four feet. *See* e-workpaper "IRR Grading Opening.xlsx," tab "CALC." Thus, the conditions the SARR will encounter are accounted for in the USDA data.

Given the similarities to the PRB and the applicability of the USDA maps to the work at hand, as discussed in detail below, IPA's engineers have used real world excavation costs from a large track construction project undertaken in

2007 on UP's Powder River Subdivision between Jirch and Shawnee, WY and applied those costs to common excavation.

Photographs of the various regions traversed by the IRR are also included as e-workpapers in a folder titled "Photos."

A summary of the IRR's roadbed preparation costs is presented in Table III-F-3 below.

TABLE III-F-3
IRR ROADBED PREPARATION COSTS[1]

	Item	Cost
1.	Clearing and Grubbing	$52,516
2.	Earthwork	
	a. Common	7,209,925
	b. Loose Rock	749,483
	c. Solid Rock	517,650
	d. Borrow	65,341,903
	e Land for Waste Excavation	11,718
3.	Drainage[2]	
	a Lateral Drainage	0
4	Culverts[3]	1,344.237
5.	Retaining Walls	0
6.	Rip Rap	46
7.	Relocation of Utilities	3,124
8.	Topsoil Placement/Seeding	76,425
9.	Water for Compaction	1,095,659
10.	Environmental Compliance	3,766
11	**Total**	**$76,406,451**

[1] *See* e-workpaper "IRR Grading Opening.xlsx."
[2] Yard drainage is included in building site development costs
[3] *See* e-workpaper "Culvert List 2011.xls."

a. **Clearing and Grubbing**

i. **Quantities of Clearing and Grubbing**

The UP mainlines being replicated by the IRR were constructed in the 1800s. Thus, these lines were built before the ICC Bureau of Valuation prepared the ICC Engineering Reports. E-workpaper "IRR Grading Opening.xlsx" identifies the data obtained from the ICC Engineering Reports, including the acres per track mile that were cleared and grubbed for those rail lines being replicated that were originally constructed in the 1800s. The ICC Engineering Reports were obtained from the National Archives and Records Administration. *See* e-workpaper "ICC Engineering Reports.pdf." All of the lines being replicated except for one small spur segment are covered by ICC Engineering Report data.

The first 0.19 miles of the IPP Industrial Lead (the spur serving IGS) owned by UP (and thus the IRR) was constructed in the late 1980s. For this segment, IPA's experts used the acres per track mile quantities for the adjacent valuation section, SPLASL-16-UT.

E-workpaper "IRR Grading Opening.xlsx" identifies the acres per track mile that were cleared for the construction of these line segments. The quantities obtained from the ICC Engineering Reports, as shown in e-workpaper "IRR Grading Opening.xlsx," tab "ER INPUT" and discussed above, are assigned to the IRR's line segments in e-workpaper "IRR Grading Opening.xlsx," tab "Other EW."

The clearing quantities (acres per track mile) were then increased by the ratio of the current roadbed specifications to the original construction specifications and applied to the track miles (including yards and sidings) of the IRR's line segments in the same manner as the grading quantities discussed below. E-workpaper "IRR Grading Opening.xlsx," tab "Other EW" details the calculation of the IRR acreage requiring clearing.

The acres per track mile of grubbing were also obtained from the ICC Engineering Reports. According to the ICC Engineering Reports, there were no acres of grubbing for the line segments of the IRR. *See* e-workpaper "IRR Grading Opening.xlsx," tab "ER INPUT."

ii. <u>Clearing & Grubbing Costs</u>

Based on field trips taken in April 2011 and July 2012 by John Ludwig, an engineer who works in Mr. Stone's firm, as well as pictures from inspections by Stuart Smith (IPA's land valuation witness), it was determined that the IPA route would require minimal clearing and most of the clearing would involve the removal of brush and grasses as opposed to trees. This is supported by the ICC Engineering Reports which show minimal clearing and no grubbing. *See* e-workpaper "IRR Grading Opening.xlsx," tab "ER INPUT." It is also supported by many photographs taken by IPA's witnesses during the field trips described above.

IPA's engineers followed the methodology previously accepted by the Board in developing the IRR's clearing and grubbing costs. That methodology dictates that if the IRR had acres that were grubbed (according to the ICC Engineering Reports), it should be assumed that trees were also cleared. Thus IPA's engineers have used both the cost per acre for clearing (cut and chip medium, trees to 12" in diameter) and the cost per acre for grubbing (associated with cut and chip medium, trees to 12" in diameter) from the RS Means 2012 Site Work & Landscape Cost Data book ("Means Handbook"). For the remaining acres of clearing (*i.e.*, those acres not requiring grubbing), it was assumed that only brush was cleared as there was no grubbing of tree stumps. *See AEP Texas*, slip op at 79.

For the acres of clearing required for the IRR (*i.e.*, acres not requiring grubbing), IPA's engineers applied the cost per acre of $284.24 from the Means Handbook, indexed to November 2012 and adjusted by the Means Handbook location factors,[3] for clearing with a dozer and brush rake, medium brush to 4" diameter.

[3] The unit costs from the 2012 Means Handbook utilized by IPA's engineers are indexed from January 2012 to November 2012 and are also adjusted by the Means Handbook location factors. The cost figures in the Means Handbook represent national averages. The Means Handbook city cost indexes for site construction are used to develop weighted average factors based on IRR route miles. *See* e-workpaper "IRR Grading Opening.xls," tab "Loc Factor." The pages from the Means Handbook showing the city cost indexes, as well as the Means Handbook unit costs used in roadbed preparation, are contained in e-workpaper "Means Unit Costs.pdf"

The IRR requires zero acres to be cleared and grubbed, and 184.76 acres to be simply cleared at a total cost of $52,516 at 4Q12 levels. *See* e-workpaper "IRR Grading Opening.xlsx," tab "Other EW."

b. <u>Earthwork</u>

i. <u>Earthwork Quantities from ICC Engineering Reports</u>

As noted above, all of the mainline tracks being replicated by the IRR are covered by ICC Engineering Reports. E-workpaper "IRR Grading Opening.xlsx," tab "ER INPUT" summarizes the data extracted from the ICC Engineering Reports for each valuation section applicable to the IRR. E-workpaper "IRR Grading Opening xlsx," tab "Val sections" contains a list of the ICC Engineering Report valuation sections applicable to the IRR and the lines of the IRR to which they apply. E-workpaper "IRR Grading Opening.xlsx," tab "Distribution" summarizes the distribution of earthwork quantities into the four earthwork categories shown on the ICC Engineering Reports: (1) common excavation; (2) loose rock; (3) solid rock, and (4) borrow. E-workpaper "IRR Grading Opening.xlsx," tab "Earthwork" summarizes the grading quantities after adjusting the ICC Engineering report quantities to reflect the IRR's modern roadbed specifications.

Based on a review of the railroad construction literature prevailing at the time, the IPA engineers estimated that the ICC Engineering Report quantities for the UP rail lines comprising the portion of the IRR to be constructed reflect average roadbed widths of 16 feet for fills and 18 feet for cuts. *See* William C. Willard, *Maintenance of Way and Structures* 29-31 (McGraw-Hill Book Company 1915) included in e-workpaper "Original Roadbed Widths pdf." The IRR has single-track roadbed widths of 24 feet for fills and 40 feet for cuts and double-track (or passing siding) roadbed widths of 39 feet for fills and 55 feet for cuts based on 15-foot track center spacing, and a side slope of 1.5 to 1 *See WFA I*, slip op. at 83 (accepting the same roadbed specifications used for the IRR).

ii. Earthwork Quantities for Segments Not <u>Covered by the ICC Engineering Reports</u>

As noted above. all portions of the IRR, except the 0.19 miles of the IPP Industrial Lead, are covered by the ICC Engineering Reports. For this small segment, IPA's experts used the per-track mile quantities for the adjacent valuation section, SPLASL-16-UT.

iii. <u>IRR Earthwork Quantities and Costs</u>

Once the adjusted earthwork quantities per mile were developed, it was necessary to calculate the total earthwork requirements and costs. The details of the procedures used are explained below

(a) <u>IRR Line Segments</u>

"IRR Grading Opening.xlsx," tab "CY Grading" details the calculation of the earthwork quantities for all of the IRR's line segments. First, as discussed above, the IRR line segments were matched with the applicable valuation sections Next, the track miles for each segment were categorized as first main (route miles), second main (double track and passing sidings) and other track (such as interchange tracks and setout tracks) based on the IRR's track configuration as developed by IPA Witness Paul Reistrup and detailed in Exhibit III-B-1. Finally, the number of tracks was multiplied by the applicable cubic yards per mile for the appropriate valuation section.

(b) IRR Yards

The IRR has two small interchange "yards" and one locomotive shop facility. The small interchange yards are located at Lynndyl and Milford. The locomotive shop trackage (considered a yard for construction purposes) is located near Provo. *See* Exhibit III-B-1 for exact locations.

For each interchange yard, IPA's engineering experts calculated the grading requirements based on an assumed average fill height of one foot and 15-foot track centers, applied to the appropriate miles of track in these yards. The grading requirements for the locomotive shop were based on an assumed average fill height of one foot (the net result of the removal of three feet of unsuitable material replaced by four feet of fill) and 25-foot track centers. The one-foot fill height for yards is a technique that has been applied and accepted repeatedly to develop SARR yard earthwork calculations. *See AEPCO 2011*, slip op. at 90; *Wisconsin P&L*, 5 S.T.B. at 1022, *Xcel I*, 7 S.T.B. at 675; *AEP Texas*, slip op. at 81; *Otter Tail*, slip op. at D-10; *Duke/NS*, 7 S.T.B at 172; *Carolina P&L*, 7 S T B at 310-311; and *Duke/CSXT*, 7 S.T.B. at 477.

(c) Total Earthwork Quantities

In order to properly develop the quantities for grading the IRR's roadbed, it was necessary to separate the earthwork requirements into four types of material – common, loose rock, solid rock and borrow. This was done by distributing the total quantities for the line segments developed in e-workpaper "IRR Grading Opening.xlsx," tab "CY Grading" and "Distribution" based on the distribution percentages obtained from the ICC Engineering Reports

IPA's engineers classified the yard and interchange location earthwork as excavation because the estimated yard track quantities removed from the ICC Engineering Report total quantities were removed from the excavation quantities for each valuation section. The distribution of the earthwork quantities by type of material for the IRR line segments is shown in e-workpaper "IRR Grading Opening.xlsx," tab "EW Cost" and summarized in Table III-F-4 below.

TABLE III-F-4
IRR EARTHWORK
QUANTITIES BY TYPE OF MATERIAL MOVED

	Type of Earth Moved	Cubic Yards (000s)
1.	Common Excavation	1,793,514
2.	Loose Rock Excavation	63,396
3	Solid Rock Excavation	33,519
4	Borrow	2,498,081
5.	Total	4,388,510

Source E-workpaper "IRR Grading Opening.xlsx," tab "EW Cost."

(d) <u>Earthwork Unit Costs</u>

IPA's engineers' common earthwork unit cost is based on a project undertaken by UP on its Powder River Subdivision between Shawnee and Jirch, WY, which abuts the Joint Line over which UP reaches the PRB mines. This project is described in more detail below.

As discussed below, the "loose rock" excavation category described in the ICC Engineering Reports is no longer an element of modern grading projects. Instead, such costs are subsumed in "common" or unclassified excavation projects. Nevertheless, to be conservative, IPA's engineering experts have retained the standard loose rock excavation category and costs based on the Means Handbook that have been repeatedly utilized by shippers and accepted by the Board in SAC rate cases. IPA has also included solid rock excavation and borrow costs based on the methodology and cost data accepted by the Board Likewise, IPA has utilized borrow/embankment procedures and costs that have been repeatedly accepted by the Board.

(i) <u>Common Earthwork</u>

As noted above, IPA's common earthwork excavation unit cost is based on UP's Shawnee-Jirch project. This project included the construction of roughly 15 miles of third main track between Jirch (MP 250 3) and Shawnee (MP 264.7). The Shawnee-Jirch project included a large volume of common grading ({ } CY), which is described in the accompanying bid tabulations as "Grading-embankment." The cost per cubic yard for the grading component was

S{ }, and the project was bid in 2007 for work to be performed in 2008. This project and its unit cost for grading are very similar in nature and scope to the Walker-Shawnee Project where BNSF built 14 miles of triple track on the PRB Joint Line. The Board accepted the Walker-Shawnee unit cost and its application to common earthwork in *WFA I*, slip op. at 86. The Board accepted similar costs in *AEPCO 2011*, slip op. at 86.

The unit cost for the Shawnee-Jirch project was then indexed to November 2012 using the Means Historical Cost Index. Selected invoice pages from the Shawnee-Jirch project (provided by UP in discovery) are included as e-workpaper "UP AFE data.pdf." The Shawnee-Jirch project bid tabulation is included as e-workpaper "449130.xls." The engineering designs are included as e-workpapers "Jirch to Shawnee – 01 – Plan & Profile 8-23-07.pdf" and "Jirch to Shawnee – 02 – Sections 8-23-07.pdf."

As explained above, the Shawnee-Jirch project involved similar high-plains terrain as that found on the IRR, and the general cost applicability of that project to the IRR construction project is justified on that basis alone. However, IPA notes that the *WFA* and *AEPCO* decisions demonstrate that large scale projects generally incur much lower unit costs for common or unclassified earthwork than those proposed by the railroads in SAC cases, including those UP advocated for in Docket No. 42127. Moreover, the Board has correctly rejected the numerous add-on costs that railroads have sought (*e.g.*, fine grading), and it has correctly rejected spurious arguments that expansion projects are less expensive than new projects. *See, e.g.*, *AEPCO 2011*, slip op. at 86-88. Indeed, expansion projects, especially on busy lines such as UP's feeder line to the PRB (Shawnee-Jirch), are often far more complicated due to interference from existing operations and having to protect the existing track and roadbed. Thus, IPA has conservatively used the Shawnee-Jirch project costs without modification, except that it has indexed the cost.

(ii) **Loose Rock Excavation**

As noted above, loose rock is a classification of earthwork that has no modern analogue Moreover, the quantity of loose rock to be excavated is nominal. Nevertheless, as in prior SAC cases, the IRR would need to excavate loose rock as defined in the ICC Engineering Reports. The definition provides:

> Loose rock shall comprise all detached masses of rock or stone of more than 1 cubic foot and less than 1 cubic yard, and all other rock which can be properly removed by pick and bar and without blasting. although steam shovel or blasting may be resorted to on favorable occasions in order to facilitate the work.

ICC Division of Valuation, *Instructions for Field Work of the Roadway Branch of the Engineering Section* 110 (1916). The ICC's definition of "loose rock" assumed that the materials could have been moved by pick and bar Picks and bars are hand-held tools designed to pry rocks loose. The modern, mechanized equipment discussed below is a vast improvement over such tools. Indeed, in the *AEPCO* rate case brought in 2000, UP conceded that modern equipment is far more capable than the equipment available in 1916. *See* Joint

Supplemental Reply Evidence & Argument of The Burlington Northern & Santa Fe Ry. & Union Pacific R.R., Narrative (Public Version) at III.F-53, *Ariz Elec. Power Coop., Inc v. Burlington N. & Santa Fe Ry & Union Pac. R R.*, NOR 42058 (filed Jan. 26, 2004) In addition, IPA notes that UP does not even consider loose rock an excavation category. Its construction specifications are limited to common excavation and rock excavation. In particular, UP's construction specifications state that:

{

}

See e-workpaper "Common-Rock Excavation.pdf." All other excavation is considered "Common" under UP's specifications. Thus, IPA's engineers are being extremely conservative in applying a separate loose rock unit cost to such excavation rather than simply including it in the common excavation quantities.

For the loose rock unit costs, IPA's engineers have chosen a combination of one 300 HP dozer and one 410 HP dozer for ripping the loose rock and pushing it into piles, a 3 CY power shovel for placing the ripped and dozed rock into the truck (including the Means 15% additive), a 42 CY off highway truck to haul the material to the fill or disposal site, and a dozer to spread the material after it is dumped. Both of the dozers are equipped with rock rippers at their rear and with large push blades in front. The 42 CY off highway truck was selected because it is capable of turning in a 27' 11" radius and thus suitable for work in a railroad right-of-way *See* e-workpaper "42 CY Truck pdf" IPA's development of the loose rock excavation unit cost is consistent with the unit costs developed and accepted in prior SAC proceedings *See, e.g*, *AEPCO 2011*, slip op. at 88-89;[4] *AEP Texas*, slip op. at 81-82.

Material is compacted in fill areas using a combination of sheepsfoot and vibratory steel-wheeled rollers. The split between sheepsfoot and steel-wheeled rollers is consistent with *AEPCO 2011* (80/20). *Id*, slip op. at 89. The average cost for loose rock excavation is $11.82 per CY. *See* e-workpapers "IRR Grading Opening.xlsx," tab "Unit Costs" and "Means Unit Costs.pdf."

(iii) <u>Solid Rock Excavation</u>

IPA's engineers developed solid rock excavation costs consistent with recent Board decisions, in particular *AEPCO 2011*, slip op. at 89-90, *WFA I*, slip op. at 86-87, *AEP Texas*, slip op. at 82, and *Xcel I*, 7 S.T.B. at 677-78. First, they developed a unit cost for solid rock blasting based on an average of the Means Handbook cost for blasting rock over 1,500 cubic yards and the cost for bulk drilling and blasting. The engineers then added the costs to excavate the blasted rock, load it into trucks, haul it away, and dump it. They also included the cost to spread the material, and the average compaction cost for embankment that was used for the other earthwork categories was also applied. *See* e-workpaper

[4] The *AEPCO 2011* decision also rejected various additives that UP proposed to the already inflated loose rock costs in Docket No. 42127. *Id*, slip op at 88-89.

"IRR Grading Opening.xlsx," tab "Unit Costs." Again, the unit costs and equipment mix developed by IPA's engineers are consistent with those approved in recent Board decisions. *See WFA I*, slip op. at 86-87; *AEP Texas*, slip op. at 82-83.

When applying the unit cost to the solid rock earthwork quantities, IPA's engineers used an average of the solid rock unit cost ($19.06 per CY) and the loose rock unit cost ($11.82 per CY). This reflects their expert opinion that at least half of the quantities classified by the ICC as solid rock would be rippable (and therefore classified as loose rock or common excavation) using modern equipment. This 50/50 combination has been repeatedly accepted by the Board *See AEPCO 2011*, *WFA I* and *AEP Texas* (parties agreed, not mentioned or altered in decision); *Otter Tail*, slip op. at D-12, *Xcel I*, 7 S.T B. at 677 (BNSF agreed on this split); *Duke/NS*, 7 S.T.B. at 174; *Duke/CSXT*, 7 S.T.B. at 478. This 50/50 combination results in a cost per CY of $15.44 for solid rock excavation.

(iv) **Embankment/Borrow**

The Means Handbook-based unit costs for borrow utilized by IPA's engineers are based on a five cubic yard wheel-mounted front end loader, 20 CY capacity dump trucks to haul material to the construction site, a dozer to spread the material, and the average compaction cost for embankment that was used for the other earthwork categories. Borrow unit costs equal $26 16 per CY at 4Q12 levels. The embankment/borrow unit costs and equipment package have been repeatedly accepted by the Board. *See, e.g., AEPCO 2011*, slip op. at 88; *AEP Texas*, slip op. at 81; *Otter Tail*, slip op. at D-13.

(v) <u>Fine Grading</u>

The Shawnee-Jirch unit cost includes any necessary fine grading In particular, contractors are usually responsible for establishing the final grade per the details of the project. *See WFA I*, slip op. at 88. UP's construction specifications are in accord with the *WFA* scenario as they state that the "Roadbed shall be finished to the lines and grades shown on the Drawings and as staked." *See* e-workpaper "finish grading.pdf." In addition, the bid tabulation and invoices for the project do not include any separate fine grading costs Thus, IPA has not included additional costs for fine grading.

(e) <u>Land for Waste Excavation</u>

Not all of the excavated material is reused as fill. Consistent with the procedures used in other SAC cases, IPA's excavation calculations assume a 30 percent waste ratio. As this waste material needs to be placed somewhere, the IRR is acquiring additional land along the right-of-way to accommodate the dumping of the waste material. IPA's engineers have assumed an average 15-foot depth for wasted materials. IPA has included an additional 23 4 acres of rural land for this purpose at an estimated $500 per acre for a total cost of $11,718. *See* e-workpaper "IRR Grading Opening.xlsx," tab "Other Cost."

(f) **Total Earthwork Cost**

The total IRR earthwork cost, including land for waste excavation, is $73.8 million. *See* e-workpaper "IRR Grading Opening.xlsx," tab "Summary."

c. **Drainage**

i. **Lateral Drainage**

The ICC Engineering Reports covering the lines of the IRR do not show any quantities for lateral drainage pipe Therefore, the IRR has no investment in lateral drainage.

ii. **Yard Drainage**

IPA's engineering experts have included yard drainage facilities for the IRR's two yards and the locomotive shop. However, before installing any particular drainage facilities, the roadbed for yard tracks is constructed to slope away from the main line. Storm water runoff thus will drain freely through the ballast and be collected by ditch lines around the perimeter of the yards. These ditches will then convey the storm water runoff offsite. Low areas can occur near facilities and between tracks separated by non-typical spacing. In those instances, catch basins are used to collect the water in the low areas. This water is then conveyed under the track to the perimeter ditch. The number of catch basins and the length of pipe installed in the IRR's yards are based on the above design scheme, as well as the layout of the facilities. The yard drainage assumed by the IRR's engineers exceeds that of UP's existing yards in the territory, where yard drainage was not observed. Yard drainage details are discussed in Part III-F-7 below.

d. **Culverts**

Culverts are devices placed in the roadbed to facilitate the movement of water from one side of the track to the other where large drainage areas, typically crossed by bridges, are not required. The culverts specified by IPA's engineers are corrugated aluminized metal pipe ("cmp") except where the size of the opening required for the conditions exceeds the maximum cmp diameter. In such cases, concrete box culverts were used.

Consistent with practice in other SAC cases, culverts replace certain bridges where a culvert is suitable.[5] The list of bridges converted to culverts on the UP lines being replicated are highlighted in e-workpapers "IPA Bridge Costs.xls," tab "bridge segments" and "Bridges & Culverts Substitution xlsx " There are two categories of bridges that were converted to culverts The first category are very short bridges, less than 20 feet.

The second category where bridges were converted to culverts are bridges that no longer traverse active waterways In particular, IPA engineers determined that certain existing bridges on the Lynndyl Subdivision are no longer required because the water feature being crossed has ceased to be active due to damming. The Beaver and Sevier Rivers have been dammed upstream of the locations that cross the Lynndyl Subdivision. While the replicated railroad was

[5] *See, e g., AEP Texas*, slip op at 93

built before the rivers were dammed, hence the bridges, the adjacent roads include no bridges. Instead, the adjacent roads have only small culverts to accommodate rain water that still flows toward the now dry riverbed. This demonstrates that there is no longer any need for bridges in these locations. The locations where culverts can replace bridges (and where IPA's engineers could provide photographic proof) are highlighted in light blue in e-workpaper "IPA Bridge Costs.xls." In addition, photographic support showing where culverts are installed on the adjacent roads is included in e-workpaper "Delta to Milford Photos.pdf" In locations where the bridges were not accessible from the highway, and thus no photographic proof was possible, no substitutions were made. Finally, information concerning the damming of the Beaver and Sevier Rivers is included in e-workpaper "Sevier and Beaver River Dams.pdf" In total, 10 bridges are no longer required on the Lynndyl Subdivision.

Finally, IPA's engineers have converted one larger culvert to a bridge (MP 653.69 on the Lynndyl Subdivision). Therefore, IPA's engineers have substituted 28 culverts for existing UP bridges and one bridge for an existing UP culvert. The details of the substitutions are shown in e-workpapers "Culvert List 2012.xls," tab "bridge to culvert" and "Bridges to Culverts Substitution.xls"

i. **<u>Culvert Unit Costs</u>**

Unit costs were developed for the installation of culverts assuming that the open trench placement method would be used. Unit costs for the cmp culverts are driven by the linear feet of the culvert required in a particular location as well as the diameter of the pipe *See* e-workpaper "Culvert List 2012.xls," tab "Pipe Total Costs" for details of the unit prices and sizes of the cmp utilized on the IRR. Unit costs for the concrete box culverts are driven by the width and height of the opening, as well as the linear feet through the track cross section. Additional unit costs were developed for excavation, furnishing and placing crushed stone for bedding material, rip rap for slope protection, culvert installation, and backfill for both culvert types. These unit costs are detailed in e-workpaper "Culvert List 2012.xls," tabs "Installation Reference Cost," "Total Pipe Cost" and "Reference Worksheet."

ii. Culvert Installation Plans

All culverts are installed during the early stages of preparation of the railroad subgrade. The sites are easily accessible, in part through the ongoing preparation of the roadbed. Moreover, the culverts can be installed with a minimum of excavation using the open trench method of installation. In particular, culverts are installed after a sufficient depth of compacted roadbed fill has been placed. A trench is excavated to a depth of one foot below the flow line of the culvert, and one foot of bedding stone is placed in two compacted layers. The culvert is laid, and then backfilled in compacted layers back to the top of the trench.

Work production of the crews is consistent with IPA's proposed construction schedule because there are no deep trenches to excavate or work in, and by installing the culverts at this stage of the project, no waterway diversions are required

Once the base layer of the roadbed is in place, the trench for the cmp or concrete box culvert is excavated one foot wider on each side than the culvert width. The bottom of the excavation is covered with an average depth of 12" of crushed stone bedding material to act as a foundation and cushion for the culvert, providing a means for transferring the load into the ground below the culvert as well as a level surface. The first culvert section is placed on the prepared bedding material. The next section is placed adjacent to the first and a connecting band is installed to connect the two sections. This continues until all sections have been set in place The culvert is backfilled, and rip rap is placed for slope protection. After the subbase has been prepared, most culverts can be installed in less than one day.

iii. Culvert Quantities

IPA's engineers used the culvert inventories provided by UP in discovery, which include the length and diameter of the culvert. The inventory was culled to create a list of the culverts on the lines that the IRR is replicating. IPA's engineers then added additional culverts where a culvert was being substituted for a bridge and removed culverts where a bridge was more economical.

IPA's engineers note that the inventory provided by UP does not reconcile with the culverts shown on UP's track charts for the lines being replicated. The engineers relied on the inventory rather than the track charts because this inventory provided more comprehensive data

iv. Total Culvert Costs

The total cost of the IRR's culverts is $1.34 million. *See* e-workpaper "Culvert List 2012.xls" tab "Culverts Summary Sheet."

e. Other

i. Side Slopes

The IRR roadbed has average side slopes of 1.5:1. This side slope design has consistently been accepted by the Board. *See AEP Texas*, slip op. at 80; *WFA I*, slip op at 83; *Otter Tail*, slip op at D-8; *Xcel I*, 7 S T B. at 672; *Duke/NS*, 7 S.T.B. at 171; *Carolina P&L*, 7 S.T.B. at 310; *Duke/CSXT*. 7 S.T.B. at 476; *TMPA*. 6 S.T.B. at 701 n.183; *Wisconsin P&L*. 5 S.T.B. at 1021-22 and *FMC*. 4 S T B at 795. Moreover, use of 1 5:1 side slopes is supported by Hay's definitive *Railroad Engineering Manual* and The American Railway Engineering and Maintenance of Way Association Manual for Railway Engineering ("AREMA"), §§ 1 2.3.3.2b and 1.2.3.3.3a at 1-1-22

ii. Ditches

The IRR has side ditches in cuts that are two feet wide and two feet deep and that are trapezoidal in section. In many cases, this size ditch is larger than the existing ditches (where there were any at all) on the antecedent lines. as observed during the recent field inspection by Mr. Ludwig. *See* e-workpaper "ditches pdf" for photographic examples. Two-foot ditches have repeatedly been accepted by the Board. *See Duke/NS*, 7 S.T.B. at 171, *Carolina P&L*, 7 S.T.B at 310; *Duke/CSXT*. 7 S.T.B. at 476; *TMPA*, 6 S.T B. at 701 n.183; *Wisconsin P&L*, 5 S T.B at 1023.

iii. Retaining Walls

The ICC Engineering Reports covering the lines of the IRR do not show any quantities for retaining walls under the category "Protection of Roadway" included in Account 3, Grading. Therefore, the IRR has no investment for retaining walls.

iv. Rip Rap

IPA's engineers developed rip rap quantities for the protection of the roadway from the ICC Engineering Reports and applied the unit cost from the Shawnee-Jirch project. IPA has included $46 for rip rap investment at 4Q12 levels.[6] *See* e-workpapers "IRR Grading Opening.xlsx," tab "Other EW" and "UP AFE data.pdf."

v. Relocating and Protecting Utilities

The railroad lines being replicated by the IRR were constructed by UP and its predecessors in the late 1800s. It is unlikely that any utility lines would have been present at the time As such, utility relocation costs were not incurred by the incumbent and thus, under the *Coal Rate Guidelines*, would constitute a

[6] This rip rap investment does not include the rip rap used on culvert faces and for bridge pier and abutment protection. Those costs are included where needed in the appropriate investment category.

barrier to entry if imposed on the IRR. *See AEP Texas*, slip op. at 84; *Xcel I*, 7 S.T.B. at 680; *Duke/CSXT*, 7 S.T.B. at 483

However, as noted above, one spur being replicated by the IRR was built subsequent to the existence of utility lines. Specifically, the first 0.19 miles of the IPP Industrial Lead (owned by UP and thus the IRR) was built in the late 1980s. For this line segment, IPA's engineers, consistent with Board precedent,[7] have included a total estimate of $3,124 for the cost to relocate and protect utilities based on the cost per mile accepted by the Board in *WFA* (indexed to 4Q12) *See WFA I*, slip op. at 90. *See also* e-workpaper "IRR Grading Opening xlsx," tabs "Other Cst" and "Utilities."

vi. **<u>Seeding/Topsoil Placement</u>**

Consistent with prior Board decisions, IPA's engineering experts included costs for seeding/topsoil placement in the same locations where UP incurred these costs *See AEP Texas*, slip op. at 85; *Xcel I*, 7 S.T.B. at 680-81; *Wisconsin P&L*, 5 S.T.B. at 1024; *TMPA*, 6 S.T.B. at 706; and *Duke/NS*, 7 S.T.B. at 179. For the one small newly-constructed spur segment replicated by the IRR. IPA's engineers relied on the cubic yard per route mile quantities from BNSF's construction of the Orin Line (part of which is the PRB Joint Line) in Wyoming. For the IRR's other lines, IPA's engineers relied on the embankment protection per route mile quantities obtained from the ICC Engineering Reports for the

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[7] *See Xcel I*, 7 S.T.B. at 680; *Wisconsin P&L*, 5 S.T.B. at 1024-25.

applicable valuation sections. *See* e-workpaper "IRR Grading Opening.xlsx," tab "Other Cost."

For topsoil placement costs, IPA's engineers used unit costs from the Means Handbook. For seeding costs, IPA's engineers used the cost per acre from the Shawnee-Jirch project. *See* e-workpapers "IRR Grading Opening xlsx" tab "Unit Costs" and "UP AFE data.pdf" The total IRR investment costs for seeding/placing topsoil equal $76,425. *See* e-workpaper "IRR Grading Opening.xlsx," tab "Other Cost."

vii. <u>Water for Compaction</u>

The IPA engineering witnesses have included an additional cost for water compaction but only for the borrow quantities. By inference, the Shawnee-Jirch project costs include any necessary water compaction costs as no separate costs are included for this function. This is confirmed by the relevant invoices as well. *See* e-workpapers "UP AFE data.pdf" and "449130.xls." Therefore, no additional water costs have been included for the excavation quantities reused for embankment However, as the Means Handbook costs used for the borrow costs do not include costs for water for compaction, IPA's engineers added these costs based on the quantities needed for the construction of BNSF's Orin Line and the 2011 cost per gallon incurred by the Utah Department of Transportation ("Utah DOT") indexed to November 2012 The total IRR investment costs for water for compaction equal $1 1 million. *See* e-workpapers "IRR Grading Opening.xlsx," tab "Other Cost," and "Water for Compaction – Utah DOT.pdf."

viii. Surfacing for Detour Roads

Consistent with Board precedent, IPA's engineers did not include costs for any road detours for the IRR's lines that are covered by ICC Engineering Reports, as it is unlikely that UP's predecessors incurred any costs for this item when the lines were originally constructed. *See Xcel I*, 7 S T.B. at 101; *Duke/NS*, 7 S.T.B. at 180; *Carolina P&L*, 7 S.T.B. at 317; *Duke/CSXT*, 7 S.T.B. at 484; *TMPA*. 6 S T.B. at 707-708; *Wisconsin P&L*. 5 S.T.B at 1024-25; *FMC*, 4 S.T.B. at 802.

For the IRR's one small spur segment constructed after the ICC Engineering Reports were prepared, as identified previously in the section on relocating and protecting utilities. IPA's engineers did not include any monies for road detours during construction as there are no highway crossings on this line segment.

ix. Construction Site Access Roads

In general, the IRR's track subgrade is used for its site construction roads In addition, most of the IRR right-of-way is accessible from public roads and highways, thereby permitting construction access without building separate access roads. Further, the initial construction activity includes clearing the IRR right-of-way and creating initial site access with the heavy construction equipment. As the site is leveled by either cutting or filling the right-of-way, access roads are created for moving earth, rock and other materials to and from the construction sites. In any event, no additional costs should be incurred for site construction access roads because this is normally not a compensated portion of the grading contractor's requirements. *See Duke/CSXT*, 7 S.T.B. at 476-77, *Duke/NS*, 7 S.T.B. at 172; *Carolina P&L*, 7 S.T.B. at 310; *AEP Texas*, slip op. at 80.

x. **Environmental Compliance**

Consistent with prior Board decisions, IPA's engineers did not include any costs for environmental compliance for the IRR's lines that are covered by ICC Engineering Reports because these costs were not incurred when the replicated lines were originally constructed by UP or its predecessors, and to require such costs now would be a barrier to entry. *See Wisconsin P&L*, 5 S.T.B. at 1025 (the parties agreed that environmental mitigation was only required for the recently constructed segments); *Xcel I*, 7 S.T.B. at 682 (the parties agreed on the inapplicability of such costs); *AEP Texas*, slip op. at 83. The public evidence in *WFA* also indicates that environmental compliance costs were applied only to recently-constructed lines.[8] The IRR's recently-constructed spur segment, for purposes of environmental compliance, is the same as that identified previously in the section on relocating and protecting utilities.

IPA's engineers have included a total of $3,766 for environmental compliance for the short spur segment that was constructed more recently. *See* e-workpaper "IRR Grading Opening.xlsx," tabs "Other Cost" and "Environ Comp."

[8] *See* Rebuttal Evidence of Complainants Western Fuels Ass'n, Inc. & Basin Electric Power Cooperative, Inc., Narrative (Public Version) at III-F-81-82, *WFA I* (filed Sept. 30, 2005).

3. Track Construction

Track construction encompasses the work needed to lay track once the subgrade has been completed, including placing subballast, ballast, ties, rail, and other track components. The total cost for track construction as determined by IPA's engineers is shown in Table III-F-5 below, and equals $177.0 million. Details are provided in e-workpaper "III-F Total – 2012.xlsx." Development of this cost is discussed in detail below.

TABLE III-F-5
TRACK CONSTRUCTION COST
($ millions)

Item	Cost [1]
1. Geotextile Fabric	$ 0.03
2. Subballast & Ballast	32 9
3 Ties	30.8
4. Rail	38.9
5. Other Track Materials	18.8
6 Turnouts	9.9
7 Track Installation/Labor	53.4
TOTAL	$ 174.7

[1] Transportation costs are included in individual cost items.

a. Geotextile Fabric

Consistent with the *WFA I* decision, IPA's engineers have placed geotextile fabric only under turnouts and at-grade public crossings. *Id*. slip op. at 94-95. The quantities of geotextile reflect the amount needed for turnouts only because the cost per foot for at-grade public crossings already includes geotextile costs. The total IRR geotextile quantity calculations are shown in e-workpaper

"Track Quantities-2012.xls." The unit cost for geotextile fabric was obtained from Utah DOT cost data. *See* e-workpaper "UDOT 2009 Page 2 of 17.pdf."

b. Ballast

Consistent with past practice, IPA's engineers have used 20 inches of ballast and subballast, consisting of a 12-inch subballast layer and an 8-inch layer of clean rock ballast for all main tracks. *See AEPCO 2011*, slip op. at 99, 101; *WFA I*, slip op. at 91, 93; *AEP Texas*, slip op. at 86. Diagrams of the standard IRR main track cross sections are included in e-workpaper "IRR Track Typicals pdf."

Consistent with *AEPCO 2011*, IPA's engineers used six inches of subballast and six inches of ballast under yard tracks, origin and destination spurs, helper pocket tracks, set-out tracks, and interchange tracks. Ballast for the IRR is supplied by a quarry located just to the northwest of Milford, UT. This facility supplies ballast to the UP. and UP provided a unit cost from the facility in discovery. which IPA's engineers have used in their calculation of ballast costs. The facility is directly served by rail by a private lead track connected to UP's main line at MP 584.07 on the Lynndyl Subdivision. *See* e-workpaper "Quarry Track Chart Page.pdf." This portion of UP's main line is also being replicated by the IRR. As such, IPA engineers have included the cost of a turnout connection for the express purpose of reaching the private lead track.

As the Milford Quarry is located on the Lynndyl Subdivision at a point being replicated by the IRR, IPA's engineers assumed that the ballast could not be delivered to a railhead using a ballast train until the subballast, ties and rail had been laid. Once, the basic track structure is down, it is possible to move the ballast train and ballast laying equipment to the quarry. From there, the ballast would be placed directly (*i.e.*, the ballast train will directly access the quarry and move the ballast to any location on the Lynndyl Subdivision where the ballast laying equipment is working). IPA notes that the track construction contractor is responsible for marshaling and moving the ballast as needed once it reaches a railhead (*i.e.*, the Milford Quarry). *See* "Ohio Track Construction Cost.pdf."

In order to skeletonize the track so that ballast can be laid, IPA engineers provided for a small amount, roughly 50,000 tons, of ballast to be trucked and dumped between Milford and Lynndyl (the entry point for the rail) This is, of course, in addition to the subballast. This ballast will ensure that the skeletonized rail will remain stable prior to the final laying of ballast.

Details of the unit cost and necessary transportation additives for ballast are detailed in e-workpaper "Ballast & subballast Worksheet.xls"

The IRR's subballast is sourced from the Milford Quarry and Staker & Parson, which has multiple facilities in Utah. The cost per ton of the subballast is based on quotes provided by the suppliers. IPA's engineers added transportation costs for trucking and dumping the subballast from the Milford quarry to various points along the Lynndyl Subdivision. Subballast being sourced from Staker & Parson was quoted with transportation included to various points along the Lynndyl and Sharp Subdivisions. From those quotes, an average price for subballast was derived and applied to the quantities of subballast developed by IPA's engineers. *See* e-workpaper "Ballast & subballast Worksheet.xls" for details of the subballast unit cost.

The subballast consists of similar parent materials crushed to provide a well-graded. dense layer of crushed rock similar to road base material. The subballast selected also meets AREMA standards for such materials *See* e-workpaper "AREMA 18-2-3.pdf."

Ballast and subballast quantities were developed for all sections of track based on the lengths of single and double track sections, and the roadbed sections referenced above. As noted above, the IPA engineers have included cross-sections of the IRR track designs in e-workpaper "IRR Track Typicals.pdf." E-workpaper "Ballast & subballast Worksheet.xls" includes the volume per foot of track for ballast and subballast. The quantities were calculated by multiplying the sectional area in square feet by one foot in length and then dividing by 27 to obtain cubic yards. The volume of rock displaced by the volume of the ties being used in particular locations was removed from the total volume calculation.

Ballast and subballast quantities for yards were calculated assuming each track in the yard is a single track and using six inches of subballast and six inches of ballast. IPA's experts also used the standard conversion factor of 1.5 tons/CY in determining the ballast and subballast quantities, a figure approved by the Board in *WFA I*, slip op. at 93.

c. **Ties**

IPA's engineers selected wood ties with a tie spacing of 20.5 inches for all main track, passing sidings, and branch lines. This is consistent with railroad industry standards for mainline track, and the Board has also accepted SARR wood tie spacing of 20 5 inches. *See AEPCO 2011*, slip op. at 103; *WFA I*, slip op. at 96; *West Texas Utilities*, 1 S T.B at 707 Because of the lighter traffic and slower train speeds, IPA's engineers used wood ties with 24" spacing in yards, set-out tracks and interchange tracks. *See AEPCO 2011*, slip op at 103; *WFA I*, slip op. at 96 (accepting this spacing in yards)

IPA's engineers selected standard Grade 5 treated hardwood railroad ties. The unit cost for Grade 5 ties is based on a work order for a UP project undertaken on the Provo Subdivision in 2010, which is a subdivision that is located near the Sharp Subdivision. *See* e-workpaper "WO 03907 Page 13.pdf."

The IRR is constructing its bridges with ballast decks, thereby obviating the need for transition ties. *See WFA I*, slip op. at 97. Similarly, the Board has recognized that transition ties are not needed at turnouts. *Id.* Transition ties are included at road crossings, but those particular costs are reflected in the road crossing unit prices.

d. **Track (Rail)**

i. **Main Line**

As discussed in Part III-B, new 136-pound standard CWR is used for the IRR's main tracks and passing sidings. The IRR's cost per linear foot for 136-

pound standard rail was derived from information provided by UP in discovery. *See* e-workpapers "Rail Worksheet - 2012.xls" and "WO 54409 – Page 11 of 22.pdf." The rail the IRR is using is produced by Progress Rail at a mill located in Pueblo, CO. IPA's engineers added transportation costs to deliver the rail from Pueblo to Lynndyl.[9] The route from Pueblo, CO to Lynndyl is as follows: Pueblo to Denver; Denver to Grand Junction, CO; Grand Junction to Provo; Provo to Salt Lake City; Salt Lake City to Lynndyl.

The rail is welded together into approximately 1600-foot lengths and then placed on a rail train. The rail installation contractor is responsible for distributing the rail from the railhead. The distribution costs are rolled into the track construction costs.

ii. Yard and Other Tracks

As discussed in Part III-B, the IRR is using 115-pound relay CWR for yard, interchange, origin and destination spurs, helper pocket tracks, and set-out tracks. The unit price per foot for the 115-pound relay rail is based on a quote from Progress Rail. *See* e-workpaper "IPA_Progress Rail_PhoneLog.pdf." The 115-lb relay rail is also being delivered using the same route as that taken for 136-pound rail. *See* e-workpaper "Rail Worksheet - 2012.xls."

iii. Field Welds

The cost of material for field welds was derived from a work order provided by UP in discovery. *See* e-workpaper "WO 03907 Page 14.pdf." Field

[9] Rail transportation distances were determined using PC*Miler 18.

welds are required to connect the 1600-foot strings of welded rail produced by the manufacturer as well as to insert insulated joints, make connections to turnouts and span grade crossings. The calculations for the number of field welds are shown in e-workpaper "Track Quantities - 2012.xls," tab "Track Quantities. The cost of labor for field welds is included in the bid provided by Ohio Track, which notes that it is providing a completed product, including laying rail. *See* e-workpaper file "Ohio Track Construction Cost.pdf"

iv. Insulated Joints

Insulated joint costs are included in the signals and communications costs described in Part III-F-6 below.

e. Switches (Turnouts)

IPA's engineers included the number and size of turnouts specified in the IRR's track diagrams (Exhibit III-B-1). Unit costs for turnouts are based on a quote obtained by IPA's engineers and indexed to 4Q12 (the same quote was accepted in *WFA I*). *See* e-workpapers "III-F Total – 2012 xlsx" tab "Material Unit Cost" and "Progress Rail.pdf." Turnouts are panelized and include all necessary materials. Switch stands are also included as needed The unit costs for switch stands are based on a quote obtained by IPA's engineers and indexed to 4Q12. *See* e-workpaper "Switch Stands Hand.pdf" and "Switch Stands Powered pdf." Switch heaters and related propane tanks are also included at each mainline turnout. The unit costs for the switch heaters and propane tanks are based on quotes obtained by IPA's engineers and indexed to 4Q12 *See* e-workpapers "Switch heaters.pdf" and "Propane Tank.pdf." Switch machines are included in the signals costs where applicable.

f. Other

i. Rail Lubrication

Rail lubricators are used by the IRR to distribute grease to the wheel/flangeway interface where the degree of curve of the track is four degrees or greater on mainlines and branches. Spacing of lubricators is based on the coverage of the grease as defined by the supplier, and as warranted by track conditions. Details of the lubricator count are shown in e-workpaper "Curve Data Worksheet-2011.xlsx" The unit cost for rail lubricators is based on a quote from L.B. Foster indexed to 4Q12. *See* e-workpaper "Rail Lubricator.pdf."

ii. Plates, Spikes and Anchors

On tangents and curves less than three degrees, the IRR is using wood ties with cut spikes that will be used to hold the rail to the tie plate and the tie plate to the ties, and to provide lateral restraint to hold the rail to gauge (4'-8½" inside dimension between the railheads). Two spikes per tie plate (four spikes per tie) are used on all tracks with timber ties and less than 3-degree curves. This spiking pattern is standard practice for U.S. railroads, is used by UP in the territory being replicated, and was approved by the Board in *WFA I*, slip op. at 103. AREMA standards also support two spikes per plate *See* e-workpaper "Spiking.pdf."

For curves three degrees or greater, pandrol plates and clips are used with four screw spikes per pandrol plate. This pattern is consistent with industry practice and AREMA. *Id.*

Rail anchors are drive-on or spring clip-on devices that clamp under the base of the rail and bear against the sides of the timber ties. Anchorage of the rail prevents the rail from running, or moving in a longitudinal direction down the track due to thermal expansion or train acceleration/braking loads. The anchors transmit the longitudinal stress forces in the rail to the ties, which then transmit the forces to the ballast thereby restraining movement of the track structure. Anchors are used on both sides of every other tie on main track, branch lines, yard tracks, set-out tracks and interchange tracks where the curvature does not exceed three degrees (no anchors are required where pandrol clips are used). Anchors are used on both sides of every tie for 200 feet on each end of grade crossings and turnouts (those costs are included in the grade crossing and turnout costs). The anchoring pattern being used on the IRR is consistent with AREMA. *See* e-workpaper "Anchoring pdf"

The unit costs for plates, spikes, anchors, and clips are detailed in e-workpapers "III-F Total- 2012.xlsx" tab "Material Unit Cost," "WO 03907 Page 13.pdf," "WO 03907 Page 14 pdf," and "Rail Lubricator pdf."

iii. <u>Derails and Wheel Stops</u>

Derails are used to keep cars from rolling from a spur track or side track through a turnout and onto the main track. Derails are included at all FED set-out track turnouts and at yard turnouts at the three yard locations where cars are set out from trains and stored. Wheel stops are used at the end of single ended tracks to keep the cars from rolling off the end of the track. The unit cost for a derail is based on the Means Handbook cost from 2011, indexed to 4Q12. *See* e-workpaper "2012 RS Means Page 648.pdf." The total costs are described in e-workpapers "III-F Total-2012.xlsx" and "Track Quantities-2012.xls."

iv. Materials Transportation

Specific transportation costs associated with a given item are addressed in the relevant portions of this Subpart, or in the applicable e-workpapers. Therefore, no additional transportation costs have been added for those items.

IPA notes, however, that UP suggested in Docket No 42127 that the inter-railroad courtesy rate of $0.035 per ton-mile for shipping rail and other materials that IPA uses here is no longer valid [10] To that end, it proposed a much higher figure, $0.15 per ton-mile, citing a public tariff to move only *one* car of ballast, which included a fuel surcharge, for a total cost per car of $2,348. Putting aside that the IRR would never move a single car of ballast and that any rate for one car is likely to be significantly higher than a rate for moving larger quantities, the R/VC ratio for such a move is 194%. This far exceeds what one would expect from an inter-railroad courtesy rate. In a far more apt comparison, when a unit

[10] This rate has been accepted in prior SAC cases. *See. e.g.*, *Xcel I*, slip op at 687.

train of 100 cars of ballast (100 tons per car) is costed, the URCS Phase III per ton-mile cost is only $0.022. Thus, at the $0.035 rate that IPA has applied, the R/VC ratio on such a move is 157%, which is probably still too high. Yet, that figure pales in comparison to the R/VC ratio using $0.15 per ton-mile (671%). Thus, in this Opening, IPA has continued to use the $0.035 ton-mile additive

v. **Track Labor and Equipment**

The IRR's track laying and related costs were derived from a quote obtained by IPA's engineering experts. *See* e-workpaper "Ohio Track Construction Cost.pdf."

4. **Tunnels**

There are no tunnels on the lines that the IRR is replicating.

5. **Bridges**

IPA's engineers have inspected the lines being replicated by the IRR and reviewed the specific information contained in UP's bridge inventory and other documentation produced by UP. From their inspection and review, IPA's engineering witnesses have developed bridge quantities and costs consistent with the IRR's needs. Bridge design and unit costs are derived from a real-world source as described below. Thus, the IRR's bridges are consistent with real-world costs and designs.

a. **Bridge Inventory**

IPA's engineers prepared the IRR bridge inventory based on a review of the bridge information provided by UP in discovery. The bridge inventory includes milepost, feature crossed, number of spans, structure type, height and total length. The inventory is provided in e-workpaper "IPA Bridge Costs.xls." As noted above, certain bridges were converted to culverts and vice-versa.

b. Bridge Design and Cost Overview

The bridge inventory being replicated is small. The IRR is only building 50 bridges (several locations have double track, and each double track location is counted as two bridges). Indeed, the longest bridge is only 150 feet long and the tallest bridge is only 26 feet high. Consequently, IPA's engineers determined that multiple bridge types are not necessary. Instead, IPA's bridge designs and costs are based on a single bridge project undertaken by UP, which was then scaled as needed for the particular bridge being built by the IRR.[11]

i. Bridge Design

When the lines replicated by the IRR were constructed, a variety of bridge types and lengths were used. However, when constructing a series of bridges from scratch, it is far simpler and more efficient to use modern bridge building techniques and a standard design if possible Thus, the IRR's bridges have the same lengths as the real-world bridges on the lines being replicated, but IPA's engineers have designed and costed those bridges using more efficient

[11] In Docket No. 42127, UP accepted IPA's standard bridge design. However, UP proposed three additional bridge types to accommodate a small number of bridges that it argued could not be built using the standard bridge that IPA had proposed. None of the bridges that UP separated out into additional bridge types by UP are being replicated on the IRR

concrete deck spans As no information was provided in discovery on the hydraulic area covered by the bridges, water flow increase/decrease was not taken into consideration in the engineers' methodology (this would be negligible in any event due to the fact that each IRR bridge either has the same number of spans, or has a decrease in span number, while keeping the length the same as the existing bridge). In addition, a number of dam construction projects have significantly reduced the peak flows of nearby rivers. *See* e-workpaper "Sevier and Beaver River Dams.pdf"

As noted above, the IRR is utilizing a single bridge type. The design of the bridge is based on a project undertaken by the UP on its Lufkin Subdivision near Caney, TX. The project was a multiphase replacement/ refurbishment of a large bridge that was built with several span types and supporting structures. For the IRR's purposes, IPA engineers adopted the design and components for Phase I of the replacement, wherein a timber trestle approach structure was replaced with a concrete deck bridge supported by steel piles. UP's designs for this structure are included as e-workpaper "WO 59631_luf02860-Segment AB (Rev.2) - Drawing 117467 pdf."

Using UP's materials list and designs for the Lufkin project, IPA's engineers determined the quantities/costs[12] that would be needed for any given

[12] The exact quantities of materials are not necessarily detailed in each instance. Instead, UP's cost for each item was categorized and broken down into abutments, piles or spans. Thus, in making the cost calculations for each IRR

bridge structure Specifically, IPA's engineers categorized the various materials and related labor into one of three categories: abutments, columns (piles, bracing and pile caps) or spans. The UP material list included all the necessary bridge items, as shown in the designs, including but not limited to piling materials, endcaps, backwalls, wingwalls, bearing pads, plate, rip rap, pile caps, channel braces, box beams, beam stops, handrails, deck plates and filler materials. Span material quantities/costs were further broken down to derive a per foot cost/quantity figure.

To calculate the necessary material, labor and transportation cost for each bridge in the inventory, IPA's engineers provided an abutment for each end of the bridge, and column (steel pile) structure(s) necessary to support the number of spans. The per linear foot cost for spans was then multiplied by the length of the bridge as reported in the UP inventory. The specifics of the procedures are shown in the individual bridge calculations included in e-workpaper "IPA Bridge Costs.xls."

ii. Bridge Costs

As already noted, the bridge design and costs were derived from a UP project on its Lufkin Subdivision. The material costs were included in data provided by UP. *See* e-workpaper "WO 59631.pdf." In addition, UP provided details on the necessary labor costs to install the bridge, including the costs for pile

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bridge, IPA's engineers are directly making only a cost calculation; the necessary materials are implicitly included via the cost structure.

driving, installing the abutments and placing the bridge girders. *See* e-workpaper "514842.xls." Finally, UP provided details on the cost to transport the bridge materials { } miles by truck to the work site. *See* e-workpaper "WO 59631 Transportation.pdf." IPA's engineers determined that the transportation cost additives were reasonable in this instance because there is a major manufacturer of pre-cast concrete structures located in Salt Lake City (Hanson Structural Precast). As all of the IRR system is located less than 200 miles from Salt Lake City, the transportation costs provided by UP should be adequate to move the bridge materials to any location on the IRR. UP's discovery documents included transportation costs from several locations, including some as far away as Nebraska. IPA's engineers included the costs that best fit the transportation the IRR would incur (*i.e*, up to { } miles). Details of the particular unit costs as applied are shown in e-workpaper "Base cost bridge.xlsx."

c. **<u>Highway Overpasses</u>**

As noted in Part III-F-8-c below, grade-separated crossings are included in the bridge calculations. In discovery, UP produced information regarding a highway overpass constructed on the Sharp Subdivision at MP 747.59, which is being replicated by the IRR. *See* e-workpaper "WO 07379 pdf." While UP provided few details of the project, from the documents provided it appears that the actual construction was undertaken by the Utah DOT and that UP paid

{ }% of the total project cost or ${ }.[13] This figure is higher than the typical overhead bridge cost submitted by complainants in SAC cases, but upon examination, it appears the overhead bridge here is unusually large compared to the typical overhead bridges included in prior SAC cases, but it is consistent with the overhead bridges that cross the IRR, as explained below.

IPA engineers made a further examination of the other seven overhead bridge locations that the IRR needs to include in its costs. The other locations, except one, also include large highway overpasses like the one at MP 747.59 (*e.g.*, Interstate Highway 15 crosses over the railroad at several points). The one non-highway overpass is a particularly "fancy" overhead bridge that was built to enable vehicular traffic to reach a new subdivision. From its appearance, IPA's engineers concluded that it was unlikely that UP had paid for any portion of the bridge. Nevertheless, to be conservative, IPA's engineers included the bridge in their list.

In light of the similarities of the bridges, IPA's engineers included the cost from the previously-described Sharp Subdivision overhead bridge for each overhead bridge that it identified. *See* e-workpaper "Highway Overpasses Costs.xlsx." IPA further notes that the { }% portion of the project cost that UP included in the work order "WO 07379.pdf" is inconsistent with the draft contract that is publicly available from the Utah DOT. In the draft contract, UP was not

[13] A picture is included as e-workpaper "747.59 aerial.pdf."

expected to pay any portion of the costs *See* e-workpaper "UDOT Draft Contract."[14] Thus, IPA continues to believe that it has been conservative in using the per bridge cost from the Sharp Subdivision project.

The total investment cost for the IRR's bridges is $13.0 million. *See* e-workpapers "IPA Bridge Costs.xls" and "Highway Overpasses Costs.xlsx."

6. Signals and Communications

The IRR's signals and communications costs are summarized in Table III-F-6 below. As described in Part III-B and Part III-C, the IRR uses a CTC traffic control system to govern train movements on the Lynndyl Subdivision. The remaining territory is "dark," but remotely controlled switches are included for mainline passing sidings in the dark territory. Communications needs are met through a combination of fiber optic trunk lines, microwave towers and land mobile radio stations. The systems and associated costs are described below.

TABLE III-F-6
SIGNALS AND COMMUNICATIONS SYSTEM COSTS
($ millions)

Item	Cost
1. CTC, Remote Switches, FEDs, AEI Scanners, and Related Equipment	$ 17 1
2. Communications	$ 6 0
Total	**$ 23.1**

[14] IPA's engineers were unable to locate the final contract.

a. **Centralized Traffic Control & Remote Switches**

The IRR's signal and communications systems were designed and costed by IPA Witness Victor Grappone. The various component quantities were developed by reviewing the IRR system diagram included as Exhibit III-B-1.

Unit costs were derived from various quotes developed by Mr. Grappone The costs developed for the CTC system include all of the materials necessary for the operation of each signal, including vital control equipment, power distribution, cables, switch mechanisms, wayside signals, internal wiring, huts, batteries, power drops, insulated joints and other appurtenances, such as concrete bases. *See* e-workpaper "IPA Signals and Communications.xls." Intelligent electronic track circuit technology is applied for the automatic signal locations between interlockings.

Automatic signals have been spaced to provide a maximum block length of 13,000 feet, which is within the capability of the equipment. Interlocking huts employ vital microprocessor technology. These huts provide far greater capability for complex logic than relay-based systems, thereby making it possible to employ advanced functionality, including the independent control and indication of the switches comprising a crossover. Sufficient switch cabling has been provided to support this feature.

IPA's engineers also provided for both manual and machine trench digging and cable installation as required to connect the equipment huts with wayside appliances. In the areas covered by fiber optic communications, each interlocking and other CTC device includes fiber optic link equipment as required to link it to the IRR's communication system, including intermediate fiber splice locations. In the areas covered by microwave communications, each of these locations includes the data radios necessary to provide this link. The entire system is linked into the dispatching center at the IRR's Lynndyl headquarters, which is also costed in this section.[15]

The dispatching center cost of $250,000 was based on previous dispatching center costs accepted by the Board, but scaled to reflect the smaller level of traffic on this SARR and the single dispatching desk. *See, e.g., WFA I*, slip op. at 114 (accepting, by incorporation, the dispatching center unit cost). The *WFA* cost was based on information provided by Alstom. The IRR does not require a separate, redundant dispatching facility, as its rail traffic volume is not very heavy. In the event of dispatch system failure, the dispatcher can use track warrants temporarily. In addition, computer aided dispatching, via track warrants, could also be utilized.

Remotely controlled switches are used in the IRR's dark (non-CTC) territory. The Fail Safe Audible Signal-Power Activated Switches ("FAS-PAS") are sold by Global Rail Systems. This is a vital system that provides operational safety through switch control and indication circuitry, time locking and wayside

[15] Mr. Grappone also developed the total number of AAR signal units for the IRR system (3,261), and provided this number to IPA's MOW witness, Gene Davis, for use in developing annual maintenance costs for the IRR's signals and communications system.

signals. Mr. Grappone conferred with the vendor, and determined that the switches would meet the operating needs of the IRR as defined by Mr. Reistrup. In addition, Global Rail Systems indicated that the FAS-PAS system is in use on the Kansas City Southern ("KCS"), a Class I railroad. Specifically, KCS uses the switches on its so-called "Meridian Speedway," which is used by approximately 25 trains a day according to the vendor. The vendor also provided an estimate of the delivered cost for each switch, as well as the necessary labor time to install it, which costs Mr. Grappone has included in his estimate. Details of the FAS-PAS system and costs are included in e-workpapers "FAS-PAS Remote Switch Notes.doc" and "IPA Signals and Communications.xls."

b. Detectors

Automatic roll-by failed equipment detectors ("FEDs") are included along the IRR main lines as required by operations and consistent with the current industry standard: AREMA 2001 Standards, Chapter 16, Section 5.3 1, Items j & k. These FEDs are located approximately every 25 miles along the main line. In addition, the detectors have been strategically located to minimize the traffic back-ups should a train be required to stop for inspection and/or to remove a bad order car At least one (and two between Lynndyl and Milford) bad order setout track has been sited within three miles of each failed equipment detector to provide for train stopping distances and allow removal of bad order cars to the setout track. All setout tracks near the detectors are 600-foot clear length (860 feet between switches) double-ended tracks.

The IRR also has three AEI scanners. Details of the costs and components for the FEDs and AEI scanners are shown in e-workpaper "IPA Signals and Communications xls."

c. **Communications System**

The IRR's railroad radio system enables locomotive communications, two-way radio communications, general voice communications, general data communications, and FED alerts. A combination of fiber optic and microwave radio technology is used for the communications system backbone, and land mobile radio technology is used to facilitate communications between end user applications and the radio system backbone. Land mobile radio ("LMR") technologies provide communication access (via fixed, mobile and portable radios) to the radio system backbone for operating crews, supervisory and track maintenance personnel that need to communicate with the railroad's operating headquarters and central dispatching facility at Lynndyl. LMR technologies are co-located with microwave radio technologies at network (tower) sites if appropriate LMR technologies operate in Very High Frequency ("VHF") mode to accommodate railroad operational frequencies assigned by the AAR.

The backbone of the IRR's railroad radio system includes fiber optic cable and microwave towers along the IRR route The split between territories served by fiber optic cable and those served with microwave towers is shown in e-workpaper "Utah Fiber.xls" In general, the Lynndyl Subdivision is served by fiber and the Sharp Subdivision is served by microwave towers.

IPA's engineers opted to use fiber optic cable for the IRR's communications backbone where it has been installed on the UP lines being replicated. The typical arrangement between a telecom provider and a railroad grants the telecom provider the right to lay fiber optic cable along the railroad's right-of-way, and then operate that cable for a contracted period of years. In exchange, the railroad is often paid fees for such access, and more importantly for present purposes, the railroad is typically allowed to use a portion of the available bandwidth free of charge. Accordingly, IPA's engineers have assumed that the telecom provider would install the fiber optic cable at its cost and that the IRR and the provider would enter a contract on terms that would entail no cost to the IRR to use it. UP did not object to this arrangement in Docket No. 42127.

IPA's engineers have included the equipment costs required to access the relevant fiber optic facilities. Each wayside control cabinet includes a fiber modem and related fiber node costs, which replace the data radio. The equipment selected is based on other projects with fiber data transmission. The unit costs for the equipment are derived from publicly available sources. *See* e-workpaper "Fiber Node Costs.pdf." These fiber modems also act as repeaters, so additional repeater locations are not required. The fiber costs also include splicing costs to access the trunk lines at control points and other intermediate points where a fiber pull box may be too far from the splice point. Cabling costs to run fiber from the pull boxes is also included.

Only some of the lines being replicated are served by fiber optic cable. For those areas where fiber is not presently in place, Mr. Grappone has included microwave tower facilities in the same locations where UP currently has microwave facilities. *See* e-workpaper "Telecom Site Map.pdf." In total, the IRR has nine microwave facilities

Microwave site costs are based on documents UP provided in discovery for standard microwave facilities and smaller stations. Eight of the nine microwave facilities are standard facilities as defined by UP and the ninth is a smaller station facility. UP's microwave site costs are comprehensive. They include, but are not limited to: a 200 foot tower, microwave terminals. VHF radio base stations, a shed, various antennas, and fencing. *See, e.g* , e-workpaper "STATIONMWutahFeb2011.xls." Labor costs are also included.

Mr. Grappone also included additional LMR facilities to ensure the consistency of radio communications between fiber nodes and/or microwave towers. *See* e-workpaper "IPA Signals and Communications.xls."

7. **Buildings and Facilities**

The IRR is a Class II railroad. It requires only a few facilities to serve its needs, including a headquarters facility, a small locomotive shop, a crew change facility and a MOW facility. The details for the various facilities are discussed below. The total building costs are summarized in Table III-F-7.

TABLE III-F-7 BUILDINGS AND FACILITIES ($ millions)	
Facility	**Cost**
1. Headquarters Building	$1 71
2 Locomotive Shop	4.44
3. Crew, MOW/Roadway Buildings	0.28
4. Yard Site Costs (Roads, Lighting, Drainage, Wastewater, etc)	1.82
Total	**$8.25**

a. **Headquarters Building**

The IRR headquarters is centrally located at the IRR's Lynndyl Yard. The building's square footage was based on the designs and costs for a building designed to hold over 60 people. *See* e-workpapers "Headquarters.pdf." and "UP Headquarters Bid.pdf." The general building costs and designs were based on a large UP yard building facility. However, IPA engineers modified the facility to accommodate the IRR's staffing and other needs. Details of the project and the costs are included in e-workpapers "2012 Buildings.xlsx," "2012 Building Sites.xls," and "2012 Headquarters Site.pdf."

b. **Fueling Facilities**

The IRR has no fixed fueling facilities Locomotive fueling is performed by trucks, *i.e* , direct-to-locomotive ("DTL") fueling, as needed, at the IRR's locomotive shop located at N. Springville Separate fueling tracks are provided at the facility, and all fueling will be performed track-side at designated locations. Specifically, IPA provided for three fueling spots. Each spot includes two high-density polyethylene pans designed to capture any fuel that might spill. *See* e-workpaper "2012 Buildings Fueling Containment Area.pdf." Piping was provided to run any spilled fuel back to the locomotive shop where it can be separated and properly disposed of, thereby reducing environmental risks. IPA's engineers also provided for construction of a road to reach the locomotive facility and the fueling spots. The details of the costs for the pans and piping are shown in e-workpaper "2012 Building Sites.xlsx."

The fueling area is also equipped for sanding and quick servicing of locomotives. Specifically, the fuel area is equipped with water for filling cooling systems, lube oil, sand, and shop air for various repair work and testing. Thus, all servicing and general inspection can be done at the fueling area along with minor repairs if needed. The costs for these items are included in the locomotive shop costs.

c. **<u>Locomotive Shop</u>**

The IRR has one small locomotive shop located at N. Springville. The small scale fits the workload because the IRR has only 14 locomotives. The location is shown in Exhibit III-B-3. Despite the small number of locomotives, IPA's engineers have provided a 22,900 square foot repair shop that is part of a larger pre-engineered metal building that incorporates 2,000 square feet of office, crew change, lunch room and locker room facilities. The structural elements of the facility are based on a quote from Kessel Construction, which the Board accepted in *WFA I*, slip op. at 126. *See also* e-workpaper "Kessel Locomotive Shop.pdf." This quote was scaled for the facility required here and indexed to 4Q12.

The facility includes two tracks to ensure throughput and repositioning for locomotives. Track 1 includes a drop table and a wheel truing area. Track 2 includes an inspection pit and a ramp track that can accommodate 2 locomotives. Both tracks are served by a 35-ton overhead crane that spans both tracks and six 3-ton jib cranes. The shop is also replete with small tools and other necessities. A locomotive wash facility is also provided. *See* e-workpapers "2012 Buildings.xlsx" "2012 Building Sites.xlsx," "2012 Buildings Locomotive Shop.pdf" and "2012 Buildings Locomotive Shop Site.pdf."

The shop is capable of all inspections from daily inspections to annual inspections as required by the FRA. The shop is designed to handle all work associated with sustaining the locomotive fleet based on component changeout and parts renewal. It can accommodate minor derailment and accident repair such as sideswipe damage and typical grade crossing collision damage.

The shop will also facilitate and accommodate power assembly repairs, basic engine overhauls if necessary, air brake component troubleshooting and renewals, truck repairs, wheelset/traction motor changeouts, wheel truing, diesel engine/main generator swap outs, engine component changeouts such as air compressors, fuel pump motors, water pumps, radiators, turbos, carbody parts, draft gear, and couplers.

This shop will not perform major component repairs such as rebuilding engines. As is typical of most railroads, these major repairs will be contracted out to vendor shops that specialize in this work. Thus, the components are repaired on a repair-and-return or unit-exchange basis. The locomotive shop is, however, set up to remove such components from the locomotive and reinstall the repaired or replaced part. In other words, the IRR shop would change out components that are rebuilt off site (contracted out), as opposed to removing and rebuilding all the individual components in-house. Consequently, the locomotive shop does not need the equipment that might be found in a major repair facility, such as an engine block washer, traction motor stands, traction motor gearcase racks, or air brake test racks.

d. <u>Car Repair Shop</u>

Under the relevant IRR (UP) car maintenance agreements, a contractor is responsible for providing all necessary shops. *See* Part III-D-2. Thus, IPA has not included a separate car shop. Running car repairs are performed at IPA's Springville railcar maintenance facility, where 1,500-mile inspections of certain empty IRR coal trains are also performed.

e. <u>Crew Change Facilities/Yard Offices</u>

The IRR has three crew change locations, Milford, Lynndyl and Provo. The crew change location at Milford is a stand-alone building. The facility is sized to meet the needs of the number of personnel for whom Milford is their home terminal. In addition, "guest" lockers are also provided for away-from-home crews. The building is a pre-engineered metal building shell The interior is finished with sheet rock wall coverings, painted. hard wearing floor surfaces. one walled-in office and a unisex restroom. The Milford facility also serves as a yard office. The crew change facilities at Lynndyl and Provo are integrated into the headquarters building and the locomotive shop, respectively. Details of the design and costs are included in e-workpapers "2012 Buildings.xlsx," "2012 Building Sites.xlsx," "2012 Buildings Crew Change.pdf," and "2012 Buildings Crew Change Site.pdf."

f. **Maintenance of Way Buildings (Roadway Buildings)**

The IRR has one MOW building at Lynndyl, accompanied by a garage facility for MOW equipment The building is similar in office space and design to the crew change facilities IPA's engineers developed the space requirements based on the total MOW staffing as developed by Gene Davis. Details of the design and costs are included in e-workpapers "2012 Buildings xlsx," " 2012 Building Sites.xlsx," "2012 Buildings Maintenance of Way Office.pdf," "2012 Buildings Maintenance of Way Garage pdf," "2012 Buildings Maintenance of Way Site.pdf," and "MOW & Crew Buildings pdf."

g. **Wastewater Treatment**

The IRR's Lynndyl Yard and the locomotive shop are located near public sewer service, and IPA's engineers assumed that a connection would be made for those facilities. For the locomotive shop, an oil/water separator system was included

A 400 gallon waste water treatment facility was included at Milford. The costs for the various items are detailed in e-workpapers "2012 Building Sites.xlsx," "2012 Buildings xlsx," "Septic System Quote.pdf," and "UP Headquarters Bid.pdf."

h. Yard Air, Yard Lighting and Yard Drainage

Yard lighting is included at each of the IRR's two yards and the locomotive shop. Lighting is provided by 40 foot light poles, with dual 3 foot arms. Each arm has a 400 watt HPS cobra head luminaire. Lights were spaced every 300 feet, and between tracks to ensure maximum coverage. However, to aid in fueling locomotives, the fueling spots near the locomotive shop include lights spaced at 100 foot intervals. The costs and details of these items are included in the general yard development costs shown for each yard in e-workpapers "2012 Building Sites.xlsx," "Marysville Yard.pdf," and "Lights1.pdf"

Yard drainage was not observed in any of the UP facilities on the lines replicated by the IRR that were inspected by IPA's engineers. Nevertheless, yard drainage is included in IPA's yard site development costs Specifically, the yards include sloping and drains are set at the low points. *See* e-workpaper "Yard Cross Section.pdf." Details of the cost calculation are shown in e-workpaper "2012 Building Sites.xlsx." No yard air is included.

8. **Public Improvements**

a. **Fences**

UP provided no data concerning the quantities or locations of fencing on any of the lines being replicated by the IRR. IPA's engineers inspected these lines and found that significant lengths of track were fenced. However, in Docket No. 42171, UP argued that more fencing was required based on a hi-rail trip performed by its experts. As IPA had no way to verify UP's observations, Mr Ludwig, who assisted Mr. Stone in the preparation of this evidence, reinspected portions of the territory in July 2012 to determine, *inter alia*, the necessary fencing, and for other purposes. In particular, on the Sharp Subdivision Mr. Ludwig observed that in many areas, particularly through towns, there was no fencing at all. The minimal fencing observed was inconsistent with typical railroad right-of-way fencing because the type and size of fence was unusually large or characteristic of a one-off fencing installation. The fences also tended to end at obvious property lines, and were therefore assumed to have been installed by the adjacent property owners. A typical example of such fencing is found at IPA's railcar repair facility. It has very tall chain link fencing, which was not observed in other locations that had clearly been fenced by UP.

The agricultural areas on the Sharp Subdivision did not have fencing. In general, the only locations where fencing was observed were pasture lands, but such fences were usually observed on only one side of the right-of-way.

Based on these observations, IPA's engineers included fencing cost for 50% of the IRR's total route miles and on one side of the track only.

On the Lynndyl Subdivision, the area from Lynndyl to Delta was similar to the Sharp subdivision and the same 50% of the total miles and fencing on one side only was used. From Delta to Oasis, the area is irrigated farmland used for crops, not livestock, and no fencing was observed. Thus, no fencing costs are included for this segment.

The area from Oasis to Milford is characterized by cattle grazing, and the right-of-way here was usually fenced on both sides. Indeed, much of the area is "open range," and cattle guards in the highway mark the limits of the free range areas. In these areas, in addition to the ROW being fenced, all grade crossings require cattle guards. Thus, fencing costs were based on 100% of the route miles and on both sides of the track.

Finally, there is no right-of-way fencing in Milford proper. The fencing appears to stop where the free range area stops. The milepost of a cattle guard in the highway, marking the end of the free range territory, was estimated as MP 580 South of MP 580, no fences were observed and thus no additional fence costs are included. The stop and start mileposts are shown in e-workpaper "ROW Fence and Cattle Guards.xlsx."

IPA's unit costs for fencing are based on data provided by UP in discovery. The fencing costs also incorporate necessary corner bracing into the per foot cost. The unit cost for cattle guards is based on prices quoted from

Powder River Livestock Handling Equipment Company which manufactures the cattle guards in Provo, UT. *See* e-workpapers "ROW Fence and Cattle Guards.xls." and "cattle guard component prices.pdf."

b. Signs and Road Crossing Devices

IPA's operating and engineering experts have included a standard package of railroad signs. including milepost, whistle post, yard limit, and cross-buck signs and posts. A complete count of the included signs is contained in e-workpaper "Grade Crossings - 2012.xlsx," with the unit costs shown in e-workpaper "III - F TOTAL - 2012.xlsx."

c. Grade-Separated and At-Grade Crossings

Consistent with *AEP Texas*, slip op at 102 and *Xcel I*. 7 S.T.B. at 115-16, the IRR is building all at-grade road crossings, and paying 100 percent of the cost for the crossing materials. *See* e-workpapers "Grade Crossings - 2012.xlsx" and "III - F TOTAL - 2011.xlsx." Details of the unit costs and quantities for grade crossing materials are included in e-workpapers "III-F Total – 2012.xlsx," and "Grade Crossings - 2012.xlsx." The IRR has no railroad/railroad grade crossings.[16]

Consistent with the *AEP Texas* decision, IPA's engineers have not included the cost for crossing protection, such as gates, flashers, and related signal

[16] There is one grade-separated railroad crossing on the Sharp Subdivision. The line being replicated by the IRR is the senior railroad. Moreover, the other track is no longer in service. Thus. IPA has not included any costs for this overhead railroad bridge.

elements such as crossing predictor huts because the lines being replicated predate the roads in the area, and such signal upgrades as may be done at a later date are generally funded through state and federal contributions. *See AEP Texas*. slip op. at 103 [17]

Grade separated crossing costs are discussed in Part III-F-5 above.

9. Mobilization

Consistent with the *Xcel I* and *WFA I* decisions, which both involved relatively small SARRs in largely rural areas, IPA's engineers have added a 3.5% mobilization factor for all items where mobilization is not already included in the contractor's bid or where transportation costs are already included, such as track materials. *See WFA I*, slip op. at 132; *Xcel I*, 7 S.T B. at 696.

10. Engineering

In *Xcel I*, the Board advised that, in that case and future SAC cases, a 10 percent estimate for all engineering cost components would be used. *Id*, 7 S.T.B. at 697. The Board followed its precedent in *Otter Tail*, slip op. at D-41. *AEP Texas*. slip op. at 104, *WFA I*, slip op. at 132, and *AEPCO 2011*, slip op. at 132 Thus, IPA's engineers have used a 10 percent additive here to cover all engineering, construction management, and resident inspection costs, as well as other items such as soil testing.

[17] IPA's signals expert, Mr. Grappone, did include the unit costs and quantities for such systems as part of his analysis of the IRR's signaling requirements

11. **Contingencies**

Consistent with prior Board decisions in other SAC cases,[18] IPA's engineering experts have used a 10 percent contingency factor and applied it to the construction subtotal excluding land. *See* e-workpaper "III-F Total – 2011.xlsx."

12. **Other**

a. **Construction Time Period**

The construction time period for the IRR is based on a 30 month construction schedule, which is more than ample given the size and complexity of the facilities to be built. The work begins with the start of surveying and aerial mapping operations A three-month period is allocated to obtain sufficient information to allow preliminary planning and engineering design to begin. Design of the railroad and appurtenances requires a ten-month period including the three-month start-up/surveying period.

Land acquisition takes approximately seven months to complete. It commences five months after project initiation. Test borings are timed to coincide with land acquisition so sufficient test borings can be made during the design process.

[18] *See AEPCO 2011*, slip op. at 133; *WFA I*, slip op. at 132-33; *AEP Texas*, slip op. at 104-05; *Xcel I*, 7 S.T.B. at 698 (parties agreed to a 10 percent contingency). *TMPA*, 6 S.T.B. at 746-47; *West Texas Utilities*. 1 S.T.B. at 710; *APS*, 2 S.T.B. at 402.

By the eighth month, grading of the Lynndyl Subdivision begins, and, as explained above, the Lynndyl Subdivision is to be completed first in order to aid in moving ballast.

In general, the construction work has been planned by subdivision. The work has been structured so that all site work and bridges can be completed prior to installation of track and signals. Total design and construction time for this project is 26 months with four months available at the end of construction for final operational testing Thus a 30-month overall construction period has been provided.

The IRR construction project will be divided into two track packages, eight grading packages, 22 bridge packages, and three building packages. *See* e-workpaper "Construction Schedule xls."

Finally, material prices have been obtained for most track materials delivered to railheads. Because of the numerous road access points along the lines, and interstate and larger state roads paralleling most of the line segments, materials that cannot be shipped by rail have been priced with shipping by truck (*e.g.*, subballast is delivered by truck). The Ohio Track proposal to install the rail materials includes moving those materials from the various rail heads to where they are required along the line.

III-G Discounted Cash
Flow Analysis

III. G. DISCOUNTED CASH FLOW ANALYSIS

The Board's SAC constraint rests on the premise that a captive shipper should pay no more than the minimum necessary to receive service from a least-cost, most-efficient replacement for the incumbent railroad and, in particular, the shipper should not bear the cost of any facilities or services from which it derives no benefit. *WFA I*, slip op. at 7; *Coal Rate Guidelines*, 1 I.C.C.2d at 523-24.[1] The SAC constraint is derived from and constitutes an application of the theory of contestable markets.

In the Board's contestable market structure, the threat of entry by the hypothetical stand-alone entity, typically, as here, a stand-alone railroad ("SARR"), constrains the rates of the incumbent The SARR, which faces no barriers to entry or exit, has an incentive to enter the incumbent's market if it can sustain itself by charging a rate below that of the incumbent. The presence of that incentive demonstrates that the challenged rates are causing the shipper to subsidize the defendant, meaning that the shipper is contributing to (subsidizing) the cost of services that it does not use.

SAC thus provides a regulatory ceiling on rates where a carrier has market dominance, and if the incumbent's rates exceed those that would be charged by the SARR (the IRR in this case), then the existing rates are unreasonable. As the Board summarized in *AEPCO 2011*:

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[1] The evidence in Part III-G is sponsored by IPA Witnesses Thomas D. Crowley and Daniel L. Fapp.

> A SAC analysis seeks to determine whether a complainant is bearing the cost of any inefficiencies or the cost of any facilities or services from which it derives no benefit; it does this by simulating the competitive rate that would exist in a "contestable market." A contestable market is defined as one that is free from barriers to entry The economic theory of contestable markets does not depend on a large number of competing firms in the marketplace to ensure a competitive outcome. *Id.* at 528. In a contestable market, even a monopolist must offer competitive rates or lose its customers to a new entrant. *Id.* In other words, contestable markets have competitive characteristics that preclude monopoly pricing.
>
> To simulate the competitive price that would result if the market for rail service were contestable, the costs and other limitations associated with entry barriers must be omitted from the SAC analysis. *Coal Rate Guidelines, Nationwide*, 1 I.C.C.2d at 529. This removes any advantages the existing railroad would have over a new entrant that create the existing railroad's monopoly power. A SARR that could serve the traffic at issue if the rail industry were free of entry barriers is therefore hypothesized. Under the SAC constraint, the rate at issue cannot be higher than what the SARR would need to charge to serve the complaining shipper while fully covering all of its costs, including a reasonable return on investment. This analysis produces a simulated competitive rate against which we judge the challenged rate *Id.* at 542.

AEPCO 2011, slip op. at 4.

Since the function of a SAC analysis is to identify the cost associated with providing most-efficient, least-cost service to the captive shipper, it follows that the SAC test should be applied in a manner that reflects rational economic behavior by the SARR. In particular, the SARR should pay no more than is necessary for its inputs. Moreover, while the IRR is considered to be a substitute or replacement for UP to the extent of the scope of the IRR's planned services, SAC does not require that the IRR replicate the UP system, operations, policies, or practices in their entirety or even any single respect. As the Board's predecessor established in *Coal Rate Guidelines*, the design of the stand-alone system and the traffic it carries are chosen to achieve the goals of maximizing revenues and minimizing service costs to the shipper, regardless of the actual circumstances of the incumbent railroad. *Coal Rate Guidelines*, 1 I.C C.2d at 543-44. The IRR must thus be considered a replacement for the relevant portions of the UP system, not a rival that is subject to retaliation from the incumbents, and it must be afforded the flexibility to configure its system and service scope in a manner that maximizes efficiency and cost effectiveness *See, e g.*, *Bituminous Coal - Hiawatha, Utah to Moapa, Nevada,* 10 I.C.C.2d 259, 280-81 (1994) (Chairman McDonald, commenting) ("*Nevada Power II*").

These core principles guide the IRR's traffic group, design, configuration, and planned operation, as detailed in the previous Parts of this Narrative. They also guide the proper treatment of inflation, taxes, and capital cost recovery, as addressed next.

1. <u>Cost of Capital</u>

Calculation of the capital recovery charge for the IRR necessarily reflects the IRR's assumed cost of capital ("COC") Past cases have consistently utilized the general (Class I) railroad industry's average costs of common equity

("COE"), debt capital, and preferred equity capital (if any), and their percentage mix within the capital structure for the industry, as determined by the Board in its annual cost of capital proceedings, in calculating the COC elements for the SARR over the relevant construction period (May, 2010 through October, 2012 in this case) and operating period (November 2, 2012-November 1, 2022 in this case). *See WFA I*, slip op. at 135, *Duke/NS*, 7 S.T.B at 123; *Carolina P&L*, 7 S.T.B. at 261-62; *Duke Energy Corp v. Norfolk Southern Ry.*, 7 S.T.B. 862, 878-79 (2004). IPA has utilized this standard Board approach here.

The IRR's cost of debt ("COD") and preferred equity[2] during the 10-year DCF period is assumed to equal the weighted average railroad industry cost of debt or preferred equity over the IRR's construction period, weighted by the IRR's investment by construction year. The COE during the construction period is based upon the Board's annual COE during each applicable year of the construction period. If, as is the case here, the SARR construction period includes a year for which the STB has not yet determined the COE, the latest railroad industry COE is used as a surrogate. In this instance, since the STB has not yet determined a 2012 COE, the 2011 COE is used as a surrogate for 2012. The IRR's capital structure reflects the industry average during each year of the

[2] In fact, the railroad industry has no preferred equity over the relevant years, and thus the IRR also has no preferred equity in its capital structure

construction period, is also weighted by the IRR's investment by construction year, and is thus effectively frozen as of the end of the construction period.[3]

The COE for the IRR during each operating year reflects the COE for the railroad industry as determined by the Board, if that value has been determined. When the value has not been determined (which is presently the case for all years of the IRR's operation, 2013-2022), the simple average of the COE values for the years during the construction period is utilized, which means 2010-2012 in the present circumstances

IPA has followed the Board's approach in developing capital costs. *See AEPCO 2011*, slip op. at 135-38. This includes the exclusion of common equity flotation costs, which as explained by the STB in *AEPCO 2011*, are already included in the Board's COC computation.

2. <u>Inflation Indices</u>

The prices of goods and services used by the IRR will change over the 10-year DCF period.[4] It is therefore necessary to forecast rates of inflation for application to the capital assets and operating expenses over the timeline covered by the SAC analysis; *i.e* November 2, 2012 through November 1, 2022 The time path of capital recovery charges for the IRR likewise must maintain the real purchasing power of those charges.

[3] As with the COE, the Board has not yet developed a 2012 industry capital structure so the 2011 capital structure is used as a surrogate as well

[4] The overall change is likely to be an increase, but there is a possibility of deflation, especially for a portion of the period.

The annual inflation forecast that is used to calculate the value of the IRR's road property assets is based on actual railroad chargeout prices and wage rate indexes calculated by the AAR for materials and supplies, wage rates and supplements, and materials prices, wage rates, and supplements combined (excluding fuel) ("MWSExFuel") for western railroads, and the current Global Insight September 2012 forecast for rail labor and rail materials and supplies.[5] Board precedent endorses this approach *See AEP Texas*, slip op. at 109; *Duke/NS*, 7 S.T.B. at 123; *Carolina P&L*, 7 S.T.B. at 261. For land assets, the annual forecast inflation rate is based upon indices that reflect rural land prices on the IRR system routes.[6] Rural land indexes were developed from historic rural land values reported by the U.S. Department of Agriculture [7] This is consistent with prior cases as well *See, e.g., Duke/NS*, 7 S.T.B. at 123; *Carolina P&L*, 7

[5] Global Insight does not develop a forecast of the AAR's MWSExFuel index. IPA therefore uses a proxy that weights Global Insight's materials and supplies and labor rate index forecasts, which the Board has relied upon for purposes of execution of the DCF model.

[6] The IRR does not traverse any urban areas.

[7] *See* e-workpaper "IRR Land Inflation.xlsx." The STB determined in its *AEPCO 2011* decision that it is preferable to use a longer rather than a shorter period of historic data when forecasting future economic trends, such as an inflation rate for land values. The STB cited to its use of historical averages of more than 80-years in developing railroad cost of equity estimates. Given the STB's clear preference for longer historical averages, and the use of averages dating from the late 1920's to 1930 to calculate the IRR's cost of equity, IPA developed the historic average annual and quarterly percentage change in rural land values between 1930 and 2012 for the state of Utah, and used these historic averages to forecast future changes in rural land values.

S.T B. at 261. This collection of forecasts and their application is shown on Exhibit III-H-1.

In *Major Issues*, the Board adopted a convention for the indexing of operating expenses for a SARR under which expenses for the first year would adjust based on 100% of the change in the RCAF-U; expenses for the second year would adjust based on 95% of the change in the RCAF-U and 5% of the change in the RCAF-A, and each succeeding year of the DCF period would use a mix reflecting increasing shares of the RCAF-A in 5% increments.[8] *Id.*, slip op. at 40. IPA applies the Board's method to the indexing of operating expenses for the IRR. IPA's model uses actual RCAF-U and RCAF-A indexes through 4Q 2012, the latest quarter available, and applies Global Insight's September 2012 RCAF-U and RCAF-A forecasted indexes thereafter. IPA reserves the right to supplement this data on rebuttal.

3. **Tax Liability**

Federal taxes for the IRR are calculated on the assumption that it pays taxes at the 35% corporate rate, with all payments for debt interest, state income taxes and depreciation expenses treated as reductions in taxable income. *See FMC*, 4 S.T.B. at 847-48. Consistent with Board precedent, interest expense is calculated over a 20-year period. Depreciation expenses for tax purposes use accounting lives from the Modified Accelerated Cost Recovery System

[8] Under the Board's hybrid approach, operating expenses for the tenth and final year of the DCF period would be determined using an index comprised of 55% of the change in the RCAF-U, and 45% of the change in the RCAF-A

("MACRS") with investments placed in service in the first quarter using a mid-quarter convention. In addition, as described in Part III-H-1-f, the IRR calculated bonus depreciation available under 2010 to 2013 tax laws.

The IRR also must account for any income tax liability accruing in Utah. As detailed in Exhibit III-H-1, the state tax rate applicable to the IRR is 5.0%.

4. **Capital Cost Recovery**

The Board's DCF methodology uses economic depreciation to calculate the capital recovery cost of the IRR's property. Economic depreciation effectively represents an asset's loss of earning power as it approaches the end of its life and/or its replacement date. As a result of *Major Issues*, a 10-year analysis period is used to benchmark the IRR's asset value. However, the IRR's investments would not be retired at the end of the 10-year DCF period, and it is instead assumed that IRR will make continuing investments to enable it to operate, hypothetically, in perpetuity. IPA's calculation of SAC in III-H-1 thus accounts for the costs associated with the renewed investments in and continued operation of the IRR after 2022, using the approach approved by the Board in previous cases. *See, e g.*, *AEP Texas*, slip op. at 105-06.

Beginning with *FMC*, the Board requires an equal capital carrying charge in real terms in each year of the DCF period, regardless of changes in the SARR's volume. Accordingly, annual changes in volumes, rates, and associated revenues produce changes in the SAC results and the measure of SAC relief *See*

WFA I, slip op. at 134-35. IPA's computations of the pattern of capital recovery apply this approach. *See* Exhibit III-H-1.

Finally, IPA has incorporated the adjustment to the terminal value of the SARR that the Board addressed in its *AEPCO 2011* decision. *Id.*, slip op. at 140-41. In addition, as explained in Part III-H-1 at pages III-H-8-10, IPA has identified and corrected another issue with the DCF model's terminal value calculation.

III-H Results of SAC Analysis

III. H. RESULTS OF SAC ANALYSIS

1. Results of SAC DCF Analysis

The results of the SAC DCF analysis conducted by IPA are shown in Exhibit III-H-1. The calculations shown in each table of Exhibit III-H-1 are summarized below.[1]

a. Cost of Capital

The cost of capital for the IRR reflects the Board's annual cost of capital determinations for 2010 and 2011. The weighted average of the available years' capital costs is used through the remaining years of the DCF model.

b. Road Property Investment Values

The calculation of road property investment costs is summarized in Table C of Exhibit III-H-1.

c. Interest During Construction

Interest During Construction ("IDC") accrues on the road property assets of the IRR Table D of Exhibit III-H-1 shows the total IDC amount and the portion that is debt-related. IDC is calculated based on the investment values in Table C, the composite cost of capital by year from Table A, and the assumed length of the finance period for each account. The construction schedule described in Part III-F-12 is used as the basis for the length of the finance period for the DCF model. The portion of IDC that is debt-related is calculated by

[1] IPA addresses the cost of capital (Table A) and inflation indices (Table B) in Part III-G.

multiplying the investment by the length of the finance period, the IRR's debt percentage, and the annual cost of debt for the year of investment. Debt-related IDC is shown as an interest deduction for tax purposes during the construction period.

d. Interest On Debt Capital

Parties in prior SAC proceedings have assumed that the hypothetical SARR's debt capital would mirror the debt issued by the U.S. Class I railroads included in the Board's annual cost of capital determination. *See West Texas Utilities*. 1 S.T.B. at 712. While the parties had incorporated the cost of the railroad industry debt reflected in the Board's annual determination, they implicitly deviated from the type of debt the railroad industry utilized in its capital structure. Both shippers and railroads assumed that the SARR would issue debt structured similar to a typical home mortgage loan, *e g* , the SARR would make quarterly payments that contained a principal repayment component and an interest component. Over time as the debt was amortized, the interest component portion of the payment declined as larger amounts of the principal were repaid until, after 20 years, the debt was assumed to be completely repaid.

While such a payment stream is consistent with a typical home mortgage, it is contradictory to the payment schemes of the vast majority of railroad industry debt. Railroad companies, like other large corporations, do not customarily make periodic payments that contain constantly changing principal and interest components, but rather make coupon payments, on the debt consisting of fixed interest payments. The AAR's filing in the 2011 cost of capital determination shows that 92 percent of railroad industry debt consists of corporate bonds, notes and debentures that incorporate such periodic coupon payments.[2]

If Board precedent assumes that the SARR's cost of debt should mirror the railroad industry cost of debt, the SARR debt should also mirror the composition of that debt and how the interest and principal is returned to the debt holders. To that end, instead of amortizing the debt in a mortgage-style approach over a 20-year schedule, IPA has developed the quarterly coupon payments associated with the SARR's debt as depicted in Table E of Exhibit III-H-1.[3] The quarterly interest payment is developed by multiplying the fourth-root of the appropriate Table A cost of debt by the sum of the total investment and IDC for the year. Consistent with *Major Issues* and previous Board decisions, the debt for road property investment is assumed to be financed over 20 years. The amount of interest is deducted from taxable income for federal and state income tax purposes.

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[2] *See* the Verified Statement of John T. Gray in Ex Parte No. 558 (Sub No 15), Railroad Cost of Capital – 2011, submitted April 20, 2012 at page 19 and Appendix A, which discuss the pricing of bonds based in part on their coupon payments and shows the coupon payments for the railroads' long-term notes and debentures. Mr. Gray submitted verified statements in the 2008, 2009 and 2010 Railroad Cost of Capital proceedings that show that the debt issued by the railroads in those years also primarily consisted of notes and debentures with coupon provisions.

[3] Most railroad companies pay interest semi-annually, but to remain consistent with the structure of the Board's DCF model, IPA has assumed the SARR will make coupon payments on a quarterly basis.

e. **Present Value of Replacement Cost**

Table F of Exhibit III-H-1 shows the additional investment (on a present value basis) required to make each of the IRR's assets (excluding land) continue indefinitely at the end of its useful life. The 2010-2011 average cost of capital values are used to calculate replacement value for road property assets. This calculated investment is added to the initial investment in Table I prior to determining the quarterly cash flows.[4]

f. **Tax Depreciation Schedules**

Table G of Exhibit III-H-1 displays the tax depreciation allowed under the Federal Tax Code as currently in effect.[5] Depreciation was calculated assuming a mid-quarter convention, with assets placed in service in the first quarter. Investments in communications (Account 26), signals and interlockers (Account 27), and the track accounts (Accounts 8-12) were depreciated over seven years employing a 200 percent declining balance methodology, then switching to straight-line depreciation when the straight line percentage exceeds the declining balance percentage. Investments in bridges and culverts (Account 6), public improvements (Account 39), fences and roadway signs (Account 13), station and

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[4] Consistent with the calculation of the interest on debt discussed above, debt used to acquire replacement assets is assumed to make periodic coupon payments.

[5] The mandatory method for depreciating most tangible property placed in service after December 31, 1986 is MACRS. In addition, Engineering Costs have been amortized over a 60-month period, starting with the month in which the business begins.

office buildings (Account 16), roadway buildings (Account 17), and shops and engine houses (Account 20) were depreciated over 15 years using a 150 percent declining balance method, and then switching to straight-line depreciation at the point when the straight line percentage exceeds the declining balance percentage. Investments in grading (Account 3) and tunnels (Account 5) were amortized over 50 years using straight-line amortization. Investments in engineering (Account 1) were amortized over five (5) years using straight-line amortization These reflect the MACRS schedules and asset lives used and accepted by the Board in prior SAC proceedings.

The IRR will take advantage of additional or "bonus" depreciation provisions enacted in 2010 as part of federal economic stimulus legislation. The Economic Stimulus Act of 2008 ("Stimulus Act") provided bonus depreciation on capital investments with MACRS recovery periods of 20 years or less.[6] The American Reinvestment and Recovery Act ("ARRA") extended this bonus depreciation into 2009, while the Small Business Jobs Act ("SBJA") did so through September 2010.

Additionally, the Tax Relief, Unemployment Insurance Reauthorization and Job Creation Act of 2010 ("2010 Tax Relief Act") provides 100 percent depreciation bonus for capital investments placed in service after September 8, 2010 through December 31, 2011. For equipment placed in service

[6] UP took advantage of the Stimulus Act's bonus depreciation provision in 2008, 2009 and 2010 to defer significant taxes to later years. *See* UP's 2010 SEC Form 10-K at 69.

after December 31, 2011 and through December 31, 2012, the bill provides for 50 percent depreciation bonus. Under the Stimulus Act, ARRA, the SBJA, and the 2010 Tax Relief Act qualifying investments are allowed a 50 percent depreciation bonus in the year that they are placed into service Tax depreciation for the remaining 50 percent of the cost, or the remaining cost basis, is calculated using the standard MACRS schedules.[7] Because the DCF model assumes that the IRR's assets are placed into service in the first year of the 10-year DCF period, which in this case is November 2, 2012 through November 1, 2013, the IRR's investment qualifies for the bonus depreciation.[8] Table G of Exhibit III-H-1 displays the amount of bonus depreciation available to the IRR in 2012 through 2022.

g. **Average Annual Inflation in Asset Prices**

Table H of Exhibit III-H-1 computes the average annual inflation rate by which the capital recovery charge in Table I is indexed. The weighted average inflation rate was used because Table H calculates the required capital recovery necessary to return the investment. All road property and equipment accounts are indexed at the quarterly rates shown in Table B of Exhibit III-H-1

[7] For example, a $1 million asset with a five year MACRS life would accrue $500,000 in bonus depreciation in year 1 ($1 million x 50 percent bonus factor), plus $100,000 in standard MACRS depreciation ($500,000 remaining cost basis x 20% Year 1 MACRS factor for a 5-year asset) for a total of $600,000 in first year depreciation. *See* http://www.depreciationbonus.org/ for a description and example of bonus depreciation under the Stimulus Act and ARRA.

[8] The IRR begins calculating depreciation on all assets in the first year of railroad operations. This is consistent with the fact that no depreciation charges are incurred during the 30-month construction and testing period.

The weighted average inflation rates are based on the inflation indexes discussed in Part III-G.

h. Discounted Cash Flow

Table I of Exhibit III-H-1 shows the calculation of the capital carrying charge and associated flow of funds required to recover the total road property investment and equipment investment. Inputs to this spreadsheet were taken from the Tables described *supra*. Table I calculates the quarterly capital carrying charge required over the 40 quarters of the DCF period, after consideration of the applicable tax liability.

The total start-up investment is comprised of the road property and equipment investment shown in Table C, the road property IDC calculated in Table D, and the present value of replacement investment calculated in Table F.[9] The result equals the total investment to be recovered over the life of the IRR from the quarterly capital recovery stream. The quarterly capital recovery stream reflects the tax benefits associated with interest on the investment financed with debt from Table E and the asset tax depreciation from Table G.

The cash flow shown in Column (8) of Table I is the amount remaining each quarter after the payment of federal and state tax liabilities. This cash flow is used for payment of return on total investment in the IRR For road property investment included in the DCF, this quarterly figure is then discounted

[9] In addition, capitalized rail grinding maintenance of way expenses are included in the discounted cash flow calculation.

by the fourth root of the composite annual cost of capital from Table A. The present value cash flow is then summed for each quarter along with the future cash flow; the total equals the total cost that must be recovered. The future cash flow is the residual value of the IRR's unconsumed assets, unamortized debt and remaining tax liabilities (remaining interest and depreciation), and serves to reflect the cash flow required to account for the value of the assets not consumed during the 10-year life of the DCF model. Prior to the STB's decision in *AEPCO 2011*, unused depreciation was accounted for in the terminal value calculation on an undiscounted basis. However, the STB modified its approach in *AEPCO 2011* to calculate the present value of unused depreciation in the terminal value calculation.[10]

IPA has included the STB's modified terminal value approach in its DCF model, but in doing so, has identified an additional flaw in the STB's model. The STB's DCF model explicitly assumes that the SARR's capital structure will remain constant into perpetuity.[11] This means that the amounts of common equity and debt carried on the assumed SARR's financial statements will remain the same forever. However, the STB's DCF model assumes that after year 20, and

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[10] *See AEPCO 2011*, slip op. at 140-41.

[11] The cost of capital used to calculate the terminal value in the DCF model equals the simple average cost of capital from the first year of the SARR's construction to the most recent cost of capital issued by the STB. It also reflects the average railroad industry capital structure over the same period. Between 2010 and 2011, debt as a percentage of railroad industry capital ranged from 20.8 to 23.4 percent.

until the first assets are replaced in the replacement level of the DCF model, the railroad has no debt and no tax shielding interest payments. Stated differently, the model assumes, from a tax payment perspective, that the railroad is 100 percent equity financed after year 20 and before its first replacement cycle. This creates an irreconcilable mismatch between the SARR's cost of capital and its cash flows. The cost of capital assumes that the SARR is carrying debt, and its associated tax shielding interest payments, but the cash flows reflect no benefits from the interest tax shields.

To correct for this flaw, IPA adjusted the terminal value in the capital carrying charges to reflect the cost of capital assumption that the SARR's level of debt is held constant into perpetuity, and that interest tax shields consistent with this level of debt are accounted for in the cash flow calculation. Specifically, IPA calculated an interest tax shield perpetuity by dividing the last full quarterly coupon payment by one plus the quarterly real cost of capital.[12] This calculation aligns the cost of capital assumption of a fixed level of debt forever, with the interest payable on this debt.[13]

This change not only corrects for a flaw in the STB's DCF model, but also aligns the SARR with how the real world railroads operate. The railroads

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[12] This is the same type of calculation used to develop the terminal capital carrying charge.

[13] In order to avoid double counting the impact of the interest tax shields, IPA has adjusted the asset replacement calculations to remove the impact of the interest tax shields on replacement assets.

are constantly issuing new debt as older debt issuances mature, or the railroads call the debt before its maturity. Since the last round of mergers in the mid-1990's, the amount of railroad industry debt as measured by the four major railroads included in the STB's cost of capital calculations (UP, BNSF, CSXT and NS) has remained fairly consistent over time As shown in IPA's workpapers, the amount of railroad industry debt between 1998 and 2009 remained at around $30 billion in aggregate.[14] It is generally agreed in the financial community that borrowing can add value to a firm because of the tax shielding impact of interest payments.[15] Under the STB's current DCF model assumptions, the value this debt adds from the interest tax shields is unaccounted for in all periods in the cash flow projections, but is accounted for in the cost of capital. The change made by IPA corrects this flaw.

The development of the quarterly levelized capital carrying charge requirement is a relatively simple calculation, *i.e.*, starting capital carrying charge requirement times the quarterly index factor from Table H, which will recover total investment during the 10-year DCF model period. The starting capital carrying charge requirement which recovers the total investment is developed

[14] The amount of debt carried by the railroads increased beginning in 1996 as the railroads took on debt to finance their last round of mergers (*see* e-workpaper "Railroad Debt.xlsx")

[15] *See*, *e.g.*, Brealey, R. A., Myers, S C., and Allen, F , "Principles of Corporate Finance, Eighth Edition," McGraw-Hill Irwin, 2006. at page 476 (*see* e-workpaper "Brealey, Myers and Allen.pdf") ("most financial managers believe that there is a moderate tax advantage to corporate borrowing, at least for companies that are reasonably sure they can use the corporate tax shields").

through an iterative process. The DCF model begins with a specified amount and then runs through the calculation described above to develop the cumulative present value of the cash flow. If this cumulative number does not equal the total costs to be recovered from the quarterly revenue flow (start-up investment plus the present value of the replacement investment), the starting cost is adjusted upward or downward as necessary and the DCF model runs through the calculations again. The process is repeated until the starting quarterly charge yields a cumulative present value cash flow which equals the required investment to be recovered from the quarterly capital recovery flow.

i. **Computation of Tax Liability – Taxable Income**

Table J, Part 1 of Exhibit III-H-1 displays the calculation of the IRR's federal tax liability. The procedures followed to develop the federal tax liability are discussed in Part III-G. Table J, Part 2 shows the calculation of the IRR's state income tax liability.

j. **Operating Expenses**

Table K of the DCF model displays the operating expenses incurred in each year of the DCF period based on the traffic levels described in Part III-A. In previous cases involving application of the SAC test, annual operating expenses that change with the level of traffic volumes tended to be adjusted annually by the change in the net tons transported by the SARR. However, this approach implicitly assumes a static mix of traffic and origin-destination pairs over the DCF model period, which in many cases would not reflect the actual changes in the

SARR's traffic. A better approach is to adjust this group of costs by the annual change in ton-miles, which takes into consideration the shifting nature of a SARR's traffic.[16] In this case, IPA has adjusted train and engine personnel expenses, locomotive related expenses, railcar lease costs, and loss and damage expenses annually by the change in IRR net ton-miles. Table K states the annual operating costs on a quarterly basis, and indexes them to reflect inflation over the 10-year analysis period based on the inflation rates shown in Table B.

k. Summary of SAC

Total SAC for the IRR based on investment and operating costs is summarized in Table L of Exhibit III-H-1 The capital requirement from Table I and the annual operating expenses from Table K are presented and summed in Table L for each year of the IRR's operation.

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[16] For example, assume that in Year 1 of the 10-year period Movement A transports 1,000 tons of product over 1,000 miles of the SARR, producing 1 million net ton-miles of traffic. In Year 2, Movement A is forecasted to be discontinued, but is replaced in the SARR traffic group by Movement B. Movement B also transports 1,000 tons of product, but only moves over 100 miles of the SARR, producing 100,000 net ton-miles. Movement B will be less expensive than Movement A, given the lower aggregate costs associated with a shorter movement and the 90 percent reduction in net ton-miles. However, under the methodology used in prior SAC cases wherein certain operating costs were adjusted solely based on changes in total tons, the annual operating costs would remain unchanged (before accounting for the change in the wage and price levels) when Movement B replaces Movement A. Adjusting costs by the change in ton-miles instead of the change in tons reflects the shifting nature of the SARR's traffic mix and its actual impact on the SARR's operating costs.

2. Maximum Rate Calculations

The SAC analysis summarized in Parts III-A through III-G and the accompanying Exhibits, and displayed in Exhibit III-H-1 and Exhibit III-H-1 (Alternative), demonstrates that over the 10-year DCF period the revenues generated by the IRR exceed its total capital and operating costs under either approach to the calculation of ATC divisions.[17] The two versions of Table III-H-1 below show the measure of excess revenue over SAC in each year of the DCF period for this case.

[17] As noted in Part I and Part III-A of this Opening Evidence, IPA has calculated revenues using the Board's Modified ATC methodology and IPA respectfully submits that the Board should continue to rely upon that methodology. Nevertheless, IPA also has calculated cross-over traffic revenues using the "Alternative" ATC methodology that the Board described in Ex Parte No 715. IPA's calculations of revenues and maximum rates using this alternative assumption are set forth in Exhibits III-H-1 (Alternative) and III-H-2 (Alternative) respectively.

TABLE III-H-1 (Principal Case)
Summary of DCF Results – Nov. 2, 2012 to Nov. 1, 2022
(\$ in millions)

Year (1)	Annual Stand-Alone Requirement (2)	Stand-Alone Revenues (3)	Overpayments or Shortfalls (4)	PV Difference (5)	Cumulative PV Difference (6)
2012[1]	$14 7	$18 0	$3.4	$3.4	$3.4
2013	$89.1	$107 7	$18.6	$17.1	$20.6
2014	$92.3	$116.2	$24.0	$19.8	$40.4
2015	$95.4	$121.9	$26.5	$19.7	$60.1
2016	$98.8	$126.7	$27.9	$18.6	$78.7
2017	$102.6	$132.7	$30.1	$18.0	$96.7
2018	$106.1	$137.2	$31.0	$16.7	$113.4
2019	$109.8	$142.2	$32.4	$15.6	$129.0
2020	$114 0	$150 9	$36.8	$15.9	$144.9
2021	$116.6	$155.0	$38.4	$14.9	$159.9
2022[2]	$99.7	$132.6	$32.9	$11.5	$171.3

Source: Exhibit III-H-1. [1] 11/2 – 12/31/12 [2] 1/1 – 11/1/2022

TABLE III-H-1 (Alternative Case)
Summary of DCF Results – Nov. 2, 2012 to Nov. 1, 2022
(\$ in millions)

Year (1)	Annual Stand-Alone Requirement (2)	Stand-Alone Revenues (3)	Overpayments or Shortfalls (4)	PV Difference (5)	Cumulative PV Difference (6)
2012[1]	$14.7	$17.9	$3 2	$3.3	$3.3
2013	$89.1	$107.2	$18.1	$16.7	$20 0
2014	$92.3	$115.8	$23.6	$19.5	$39.5
2015	$95.4	$121.6	$26.1	$19.4	$59.0
2016	$98 8	$126 4	$27.6	$18.4	$77.3
2017	$102.6	$132.4	$29.8	$17.8	$95.2
2018	$106.1	$136.9	$30.7	$16.5	$111.7
2019	$109.8	$141.9	$32.1	$15.5	$127.2
2020	$114.0	$150.7	$36.7	$15.9	$143.1
2021	$116.6	$154.9	$38.2	$14.9	$157.9
2022[2]	$99.7	$132.4	$32.7	$11 4	$169.3

Source: Exhibit III-H-1 (Alternative). [1] 11/2 – 12/31/12 [2] 1/1 – 11/1/2022

Where, as in this case, stand-alone revenues are shown to exceed costs, rates for the members of the IRR traffic group – including IPA in particular – must be adjusted to bring revenues and SAC into equilibrium. In *Major Issues*, the Board adopted MMM as its rate prescription approach for use in proceedings under the *Coal Rate Guidelines*. *See Major Issues*, slip op. at 14-23

Under MMM, maximum reasonable rates for each year of the DCF period are expressed as a ratio of each movement's stand-alone revenues to the variable cost of providing the subject service over the IRR route. Revenues are expressed as each movement's annual stand-alone revenue calculated using the Modified ATC methodology detailed in Part III-A-3 (and the Alternative ATC Methodology in IPA's alternative case). Revenues are categorized based on traffic type (*i.e.*, coal and non-coal), UP origin and destination, and IRR origin and destination. Variable costs for each movement are calculated using 2011 Phase III URCS costs applied to the nine (9) cost inputs identified in *Major Issues*.[18]

A threshold issue related to the execution of MMM in this case concerns the projection of the UP Phase III URCS variable costs for each of the movements in the IRR traffic group. In *WFA II*, the Board directed use of the RCAF-A for this purpose on the grounds that it would "properly forecast the defendant carrier's variable costs" to calculate the degree of differential pricing needed to cover total SAC. *Id.*, slip op. at 30. More recently, however, the Board

[18] Consistent with Board precedent, a tenth variable, service type, was used when developing URCS unit costs for intermodal traffic.

determined that in calculating variable costs to implement an R/VC ratio rate standard, the Board's standard URCS indexing approach would produce more accurate results. *OG&E*, slip op. at 11. As it obviously would be inappropriate to use two different indices to accomplish the same, singular purpose, IPA is relying on the Board's more recent precedent, and using the Board's URCS indexing procedure to forecast variable costs for the MMM calculation

The STB's URCS index uses five indexes: the AAR's (1) Wage, (2) Wage Supplements, (3) Materials and Supplies and (4) Fuel Indices, and (5) the Producer Price Index – All Commodities ("PPI"), which are weighted by actual railroad costs reported in Annual Report Form R-1. Global Insight publishes forecasts for each of the first four indices, and the Board already accepts Global Insight's forecasts of the first three for use in the DCF model. The fuel forecast is included in the same documentation. Likewise, EIA – whose coal production, transportation cost and GDP-IPD forecasts already are accepted by the Board – publishes a PPI forecast To forecast UP URCS Phase III variable costs for MMM purposes, therefore, IPA uses the STB's URCS index, with the September 2012 Global Insight and EIA's June 2012 forecasts of its components. Weighting factors are taken from UP's Annual Report Form R-1 data.

Following the calculation of the specific annual variable costs for each movement, IPA calculated each movement's maximum contribution toward SAC each year, expressed as a mark-up over the movement's variable costs. Under MMM, a movement cannot contribute more to SAC than the contribution reflected in the mark-up of its current, actual or forecasted rate over variable cost. For each year in the DCF period, the MMM model sets each movement's R/VC ratio at the lesser of the average R/VC ratio required to cover total SAC, or the movement's actual R/VC ratio. The average R/VC ratio required to cover SAC then is iteratively increased until no movement in the traffic group is assigned a share of SAC greater than its actual contribution over variable costs as measured by its R/VC ratio, and the aggregate adjusted stand-alone revenues equal total SAC.[19] *Major Issues*, slip op. at 14

Application of MMM yields the following maximum R/VC ratios for each year of the DCF model.

TABLE III-H-2 (Principal Case)
MMM Results

Year	Maximum R/VC
2012	218.0%
2013	219.3%
2014	199.5%
2015	193.8%
2016	189.3%
2017	186.3%
2018	185.2%
2019	183.5%
2020	178 7%
2021	177 4%
2022	177.0%
Source: Exhibit III-H-2.	

[19] According to the Board, this step reflects the assumption that the rates charged by UP on all non-issue traffic are profit-maximizing rates, such that the reapportionment represents "an appropriate application of demand-based differential pricing." *Major Issues*, slip op. at 14.

TABLE III-H-2 (Alternative Case) MMM Results	
Year	**Maximum R/VC**
2012	219.3%
2013	221.1%
2014	200.7%
2015	194.0%
2016	189.2%
2017	186.1%
2018	185 0%
2019	183.5%
2020	178.8%
2021	177.6%
2022	177.3%
Source: Exhibit III-H-2 (Alternative).	

As indicated in Table III-H-2. the maximum R/VC ranges from 177 0% to 219.3% over the 10-year DCF period under IPA's Principal Case methodology. The maximum R/VC ranges from 177.3% to 221.1% over the 10-year DCF period under IPA's Alternative Case methodology.

As applied to the unadjusted Phase III URCS variable costs for the issue movements, the following MMM maximum reasonable rates apply to shipments to IGS from the various origins at the 4Q12 wage and price levels·

TABLE III-H-3 (Principal Case) IPA MMM Rates per Ton – 4Q12 Maximum Reasonable Rates for Coal Movements to IGS			
Origin/Interchange	**Car Type**	**Minimum Car Lading**	**4Q12**
Provo, UT	Gen. Svc. Hopper	100	$4.38
Provo. UT	Gen Svc. Hopper	115	$4.08
Provo, UT	Spec. Svc. Hopper	100	$4.29
Provo, UT	Spec. Svc. Hopper	115	$4.01
Source: "IGSMMM Rates.xlsx."			

TABLE III-H-3 (Alternative Case) IPA MMM Rates per Ton – 4Q12 Maximum Reasonable Rates for Coal Movements to IGS			
Origin/Interchange	**Car Type**	**Minimum Car Lading**	**4Q12**
Provo, UT	Gen. Svc. Hopper	100	$4.41
Provo, UT	Gen. Svc. Hopper	115	$4.10
Provo, UT	Spec. Svc. Hopper	100	$4.32
Provo, UT	Spec. Svc. Hopper	115	$4.04
Source: "IGSMMM Rates.xlsx."			

The maximum lawful rates for the transportation of coal from the origins covered by UP Tariff 4222 equal the greater of the jurisdictional threshold or the MMM maximum rates. Tables III-H-4 compares UP rates to IPA as of November 2, 2012, to the jurisdictional threshold and the MMM maximum. The issue rates are greater than both the jurisdictional threshold and the MMM rates for all origins.

TABLE III-H-4 (Principal Case) Maximum Rate Summary for 4Q12				
Origin	**November 2, 2012 UP Rate Level (Including fuel surcharge)**	**Jurisdictional Threshold per Ton**	**MMM Rate Per Ton**	**Maximum Rate Per Ton[1/]**
Provo, UT	$7.46-$7 64	$3 31-$3.55	$4.01-$4 38	$4.01-$4.38

[1/] The Maximum Rate Per Ton equals the greater of the Jurisdictional Threshold or MMM Rate per ton

Source. Electronic workpaper "IGS MMM Rates.xlsx "

TABLE III-H-4 (Alternative Case) Maximum Rate Summary for 4Q12				
Origin	**November 2, 2012 UP Rate Level (Including fuel surcharge)**	**Jurisdictional Threshold per Ton**	**MMM Rate Per Ton**	**Maximum Rate Per Ton[1/]**
Provo, UT	$7.46-$7.64	$3.31-$3.55	$4.04-$4.41	$4.04-$4.41

[1/] The Maximum Rate Per Ton equals the greater of the Jurisdictional Threshold or MMM Rate per ton.

Source: Electronic workpaper "IGS MMM Rates.xlsx."

3. Reparations

As described in Part I, IPA has been paying rates under UP Tariff 4222 in excess of the maximum reasonable per ton since November 2, 2012. UP thus owes IPA the difference between the rates paid and the lawful maximum levels in principal reparations payments. Such principal will increase until UP complies with a final order of the Board in this proceeding. IPA is also entitled to interest on all principal reparations amounts, calculated from the date that the first unlawful charge was paid at the rate described in Part I-D-2, and otherwise in accordance with 49 C.F.R. § 1141.1, *et seq.*

The Board's regulations (49 C.F.R. § 1141.1, *et seq*) provide for interest at the coupon equivalent of the 91-day United States Treasury bill ("T-Bill"), updated and compounded each calendar quarter. This rate is currently very low, approximately 0.90% per year, less than 1/12th of the most recent (2011) annual railroad cost of capital. There is a significant asymmetry in having the reasonableness of IPA's rates adjudged under a very high cost of capital and then having interest on IPA's reparations awarded at a much lower level. In effect, IPA is forced to lend funds to or invest capital with UP, but IPA receives a much lower return than UP's other investors, even though IPA's investment is forced, rather than voluntary. This arrangement also provides UP with little incentive to set its rates at a reasonable level initially, that is, the worst that happens for UP is that UP receives the temporary use of capital at a nearly interest-free rate. IPA respectfully submits that the Board has the discretion under the present circumstances to depart from its regulations and grant IPA interest on reparations at a reasonable rate.

IV Witness Qualifications and Verifications

PART IV

WITNESS QUALIFICATIONS AND VERIFICATIONS

This Part contains the Statements of Qualifications of the witnesses who are responsible for the Narrative portions of IPA's Opening Evidence (and the exhibits and workpapers referred to therein) identified with respect to each witness.

1. PAUL H. REISTRUP

Mr. Reistrup is a nationally recognized expert on rail operations and engineering matters. His address is 8614 Brook Road, McLean, VA 22102. Mr. Reistrup is sponsoring IPA's evidence with respect to the SARR system, operating plan and operating/general & administrative personnel (Parts III-B, III-C and part of Part III-D). He also developed the operating inputs for the RTC Model simulation of the SARR's peak-period operations, and worked with IPA Witnesses Timothy Crowley and William Humphrey who conducted the RTC Model simulation itself.

Mr. Reistrup has over 50 years of experience in railroad engineering, operations and management, and has served as President of two railroads, the Monongahela Railway (a large regional coal-carrying railroad) and Amtrak. He has also served as a consultant on rail operations and management matters, including service with R.L. Banks & Associates, Inc and as Vice President of the rail division of Parsons Brinckerhoff, an international engineering firm.

Mr. Reistrup's railroad career began in 1959, following his graduation from the United States Military Academy at West Point, NY with a B.S. in Civil Engineering and service in the United States Army, with the Baltimore & Ohio Railroad ("B&O").

He held various engineering and operating positions with the B&O and its successor, Chessie System until 1967. From 1967 to 1970 Mr. Reistrup held several senior management positions with the Illinois Central railroad and its successor, including Vice President Passenger Services, Vice President Intermodal Services, and Senior Vice President and a Director of the Illinois Central Gulf Railroad in charge of marketing, sales, pricing, piggyback, coal and industrial development. During Mr. Reistrup's tenure at IC, that carrier was the largest rail originator of Midwestern coal, and it also terminated large quantities of Western coal originated by the Union Pacific and Burlington Northern Railroads.

From early 1975 until 1978, Mr. Reistrup served as Amtrak's second President and Chief Executive Officer. During his tenure, Amtrak was transformed from primarily a contracting entity to an operating railroad that had the highest-density mix of freight, commuter and inter-city passenger trains in the nation in what is known as the Northeast Corridor between Washington, D.C. and Boston through New York City. Amtrak acquired the Northeast Corridor from Conrail in 1976.

From 1978 to 1988 Mr. Reistrup was Vice President of R.L. Banks & Associates, Inc. of Washington, D.C. ("RLBA"), a transportation consulting firm There, he directed a wide variety of railroad projects related to operations, engineering, marketing and costing for a number of private clients and government entities He directed the firm's coal transportation work on IPA's Intermountain Power Project ("IPP") from 1980 to 1988, during which period IPP constructed IGS. In connection with this assignment Mr. Reistrup designed the track layout at IGS, including the loop track used to unload coal trains, and consulted on the design of the rapid-discharge railcar unloading system at IGS. He also designed the track layout at IPA's new Springville railcar maintenance facility near Provo, UT.

Mr. Reistrup also led the RLBA team that developed alternative rail corridors to route coal and other freight traffic away from downtown Denver on behalf of the Colorado Department of Transportation. In particular, Mr. Reistrup's team recommended the consolidation of three separate rail routes extending south of Denver into one joint, multiple-track route through Littleton, CO, a recommendation that was largely adopted by the three Class I rail carriers involved.

In 1982, while still at RLBA, Mr. Reistrup was engaged to be Chief Traffic Officer of the Monongahela Railway ("MGA"), a regional coal-hauling railroad in southwestern Pennsylvania and northern West Virginia originating approximately 23 million tons of coal annually In 1988, Mr. Reistrup was elected President of the MGA. and continued to serve in that position until 1992, when the MGA was merged into Conrail While at MGA, Mr. Reistrup became familiar with all aspects of MGA's coal transportation services and the operation of MGA's coal trains. During his Presidency of the MGA, Mr. Reistrup was NORAC Rules-qualified and ran as a conductor on MGA coal trains ten times during strike situations. As a conductor, Mr. Reistrup handled brake tests and on at least one occasion loaded a coal train in the engineer's stead.

From mid-1992 to mid-1994. Mr. Reistrup served as Principal of the Railroad Development Corporation, a Pittsburgh-based railway investment and management company, where he served as General Manager of the firm's project to privatize two railroads consisting of 5,000 route-miles in Argentina In 1994, Mr. Reistrup joined Parsons Brinckerhoff as a Vice President. Mr. Reistrup was responsible for all of Parsons Brinckerhoff's activities involving railroad operations and worked closely with another Parson Brinckerhoff Vice President, Robert Pattison, on rail engineering matters.

On July 1, 1997, Mr. Reistrup left Parson Brinckerhoff and joined CSX Transportation as Vice President-Passenger Integration, with offices in Washington, D.C. In this position, Mr. Reistrup was responsible for overseeing CSXT's relations with all public and quasi-public rail transportation agencies (including but not limited to Amtrak. VRE, MARC, SEPTA, Metro North and MBTA) that operate passenger and commuter trains on CSXT's lines and vice versa. He was also responsible for negotiating settlements with these entities on behalf of CSXT during the Conrail Control proceeding, and for the successful integration of CSXT's freight and passenger operations on the Northeast Corridor (which was new passenger territory for CSXT) following consummation of the acquisition of Conrail by CSXT and Norfolk Southern.

Mr. Reistrup retired from CSXT in early 2003, and returned to his consulting work. At that time he embarked on a six-month consulting arrangement with CSXT, under which he was on call to furnish consulting services relating to passenger/commuter and freight integration issues and to provide advice as requested by CSXT's CEO and other senior officers. That consulting agreement terminated later in 2003.

Mr. Reistrup was an active member of the Transportation Research Board ("TRB"), a unit of the National Research Council of the National Academy of Sciences, from 1980 to 1998. In 1981, Mr. Reistrup was appointed a member of the Transportation Research Board ("TRB")'s Committee A2M02, which dealt with electrification and Train Control systems (signals, grade crossing protection, etc.) From 1997 to 1992, Mr. Reistrup served as Chairman of the TRB's A2M02 Committee, focusing on Train Control systems including Positive Train Control ("PTC") evolving from ATS/Cab Signals/ATC/speed control. etc. Mr. Reistrup was appointed Chairman of the TRB's AR030 Railroad Operating Technologies Committee, effective April 15, 2005. This committee is charged with exploration of innovative strategies and application of new technologies to enhance rail operations in the areas of command, control, communications, and information systems; energy supply distribution and efficiency; and propulsion systems. Mr. Reistrup continues to serve on this committee as Chairman *Emeritus*, and has participated in committee meetings addressing the complex issue of PTC implementation including, most recently, a meeting on January 12, 2010.

Mr. Reistrup is the author of an article in the Fall 2002 issue of the *Journal of Transportation Law, Logistics and Policy* (Vol. 70, Number 1, p. 57), entitled "Passenger Trains on Freight Railroads. A View From Both Sides of the Track" in which, *inter alia*, he discusses freight/passenger train use of the same lines during his tenure as Vice President-Passenger Integration at CSXT.

Mr. Reistrup is familiar with the UP lines being replicated by the SARR in this case. He has observed the rail lines, facilities and operations in this area of Utah on several occasions in connection with his previous consulting work for IPA. In connection with his work on this case, on April 20-22, 2011, Mr. Reistrup conducted a field trip in which he again visited IGS and IPA's Springville car repair facility and observed the rail facilities and operations at both locations Mr. Reistrup also observed UP's operations between Provo and Lynndyl/IGS and on UP's Lynndyl Subdivision mainline west of the connection with the IPP industrial Lead (the spur to IGS), as well as the Utah coal loading facilities from which IPA purchases coal for IGS.

VERIFICATION

I, Paul H. Reistrup, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Paul H. Reistrup

Paul H. Reistrup

Executed on December 5, 2012

2. **<u>THOMAS D. CROWLEY</u>**

Mr. Crowley is an economist and President of L.E. Peabody & Associates, Inc., an economic consulting firm that specializes in solving economic, marketing, and transportation problems. The Firm's offices are located at 1501 Duke Street, Suite 200, Alexandria, VA, 22314, 10445 N Oracle Road, Suite 151, Tucson, AZ 85737 and 21 Founders Way. Queensbury, NY 12804.

Mr. Crowley is sponsoring portions of IPA's Opening Evidence in Parts II and III. Specifically, Mr Crowley is sponsoring the portions of IPA's Opening Evidence that relate to quantitative market dominance (Part II-A); traffic and revenue (Part III-A), network needed to accommodate the issue and other SARR traffic (Part III-B); discounted cash-flow analysis (Part III-G); and the results of the SAC analysis (Part III-H).

Mr. Crowley is a graduate of the University of Maine from which he obtained a Bachelor of Science degree in Economics. He has also taken graduate courses in transportation at The George Washington University in Washington, D.C. He spent three years in the United States Army and has been employed by L.E Peabody & Associates. Inc. since February, 1971. He is a member of the American Economic Association, the Transportation Research Forum, and the American Railway Engineering Association.

As an economic consultant, Mr. Crowley has organized and directed economic studies and prepared reports for railroads, freight forwarders and other carriers, shippers, associations, and state governments and other public bodies dealing with transportation and related economic and financial matters. Examples of studies in which he has participated include organizing and directing traffic, operational and cost analyses in connection with multiple car movements, unit train operations for coal and other commodities, freight forwarder facilities, TOFC/COFC rail facilities, divisions of through rail rates, operating commuter passenger service, and other studies dealing with markets and the transportation by different modes of various commodities from both eastern and western origins to various destinations in the United States. The nature of these studies has enabled Mr. Crowley to become familiar with the operating and accounting procedures utilized by railroads in the normal course of business.

Additionally, Mr. Crowley has inspected both railroad terminal and line-haul facilities used in handling general freight, intermodal and unit train movements of coal and other commodities in all portions of the United States. The determination of the traffic and operating characteristics for specific movements was based, in part, on these field trips.

In addition to utilizing the methodology for developing a maximum rail rate based on stand-alone costs, Mr. Crowley also presented testimony before the ICC in Ex Parte No 347 (Sub-No. 1), *Coal Rate Guidelines - Nationwide*, the proceeding that established this methodology and before the STB in Ex Parte No. 657 (Sub-No. 1), *Major Issues In Rail Rate Cases*, the proceeding that modified the application of the stand-alone cost test Mr. Crowley also presented testimony in a number of the annual proceedings at the STB to determine the railroad industry current cost of capital, e.g., STB Ex Parte No. 558, *Railroad Cost of Capital*. He has submitted evidence applying ICC (now the STB) stand-alone cost procedures in numerous rail rate cases. He has also developed and presented numerous calculations utilizing the various formulas employed by the ICC and STB (both Rail Form A and Uniform Railroad Costing System ("URCS")) to develop variable costs for rail common carriers. In this regard, Mr. Crowley was actively involved in the development of the URCS formula, and presented evidence to the ICC analyzing the formula in Ex Parte No. 431, *Adoption of the Uniform Railroad Costing System for Determining Variable Costs for the Purposes of Surcharge and Jurisdictional Threshold Calculations*.

As a result of his extensive economic consulting practice since 1971 and his participating in maximum-rate, rail merger, and rule-making proceedings before the ICC and the STB, Mr. Crowley has become thoroughly familiar with the operations, practices and costs of the rail carriers that move traffic over the major rail routes in the United States.

VERIFICATION

I, Thomas D. Crowley, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Thomas D. Crowley

Thomas D. Crowley

Executed on December 10, 2012

3. **PHILIP H. BURRIS**

Mr. Burris is Senior Vice President of L.E. Peabody & Associates, Inc. The specific evidence Mr. Burris is sponsoring relates to the operating statistics of the SARR (Part III-C), locomotive and freight car requirements, crew requirements and operating expenses (Part III-D): and the portion of road property investment cost (Part III-F) related to the cost of land easements.

Mr. Burris received his Bachelors in Science in Business Administration from Virginia Polytechnic Institute and State University in 1971 He was awarded a Masters in Business Administration, specializing in transportation economics, from American University in 1978. Mr. Burris has worked in the consulting industry for over 30 years In addition to his current position as a Senior Vice President of L.E. Peabody & Associates, Inc., Mr. Burris has been an employee of the following consulting firms: A. T. Kearney, Wyer Dick & Associates, Inc. and George C Shaffer & Associates.

Mr. Burris has extensive experience in the field of transportation economics as it pertains to transportation supply alternatives, plant location analysis, regulatory policy and dispute resolution before regulatory agencies as well as state and federal courts. He has designed, directed and executed analyses of the costs of moving various commodities by different modes of transportation including rail, barge, truck, pipeline and intermodal. He has also performed economic analyses of maximum reasonable rate levels for the movement of coal and other commodities using the Board's CMP methodology, and specifically the stand-alone cost constraint. Mr. Burris has submitted evidence regarding maximum reasonable rate levels using the stand-alone cost constraint to the Board and its predecessor and testified before the Railroad Commission of Texas, the Colorado Public Utilities Commission, the Illinois Commerce Commission, the Public Service Commission of Nevada and various state and federal courts.

In the public sector, Mr Burris has performed studies and written draft reports for the Railroad Accounting Principles Board, an independent body created by Congress to establish cost accounting principles for use in implementing the regulatory provisions of the Staggers Act of 1980.

VERIFICATION

I, Philip H. Burris, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Philip H. Burris

Executed on December 10, 2012

4. DANIEL L. FAPP

Mr Fapp is a Vice President of L.E. Peabody & Associates, Inc. Together with Mr. Thomas D. Crowley, Mr. Fapp is co-sponsoring Part III-A of IPA's Opening Evidence relating to traffic and revenue, Part III-G relating to the discounted cash-flow analysis, and Part III-H relating to the results of the SAC analysis

Mr. Fapp received a Bachelor of Science degree in Business Administration with an option in Marketing (cum laude) from the California State University, Northridge in 1987. In 1993, he received a Master of Business Administration degree specializing in finance and operations management from the University of Arizona's Eller College of Management. He is also a member of Beta Gamma Sigma, the national honor society for collegiate schools of business.

Mr. Fapp has been employed by L. E. Peabody & Associates, Inc. since December 1997 Prior to joining L. E. Peabody & Associates, Inc., he was employed by BHP Copper Inc. in the role of Transportation Manager - Finance and Administration, where he also served as an officer of the three BHP Copper Inc subsidiary railroads: The San Manual Arizona Railroad, the Magma Arizona Railroad (also known as the BHP Arizona Railroad) and the BHP Nevada Railroad. Mr Fapp has also held operations management positions with Arizona Lithographers in Tucson, AZ and MCA-Universal Studios in Universal City, CA.

While at BHP Copper Inc., Mr. Fapp was responsible for all financial and administrative functions of the company's transportation group. He also directed the BHP Copper Inc. subsidiary railroads' cost and revenue accounting staff, and managed the San Manuel Arizona Railroad's and BHP Arizona Railroad's dispatchers and the railroad dispatching functions. He served on the company's Commercial and Transportation Management Team and the company's Railroad Acquisition Team, where he was responsible for evaluating the acquisition of new railroads, including developing financial and economic assessment models. During his time with MCA-Universal Studios, Mr. Fapp held several operations management positions, including Tour Operations Manager, where his duties included vehicle routing and scheduling, personnel scheduling, forecasting facilities utilization, and designing and performing queuing analyses.

As part of his work for L.E. Peabody & Associates, Inc., Mr. Fapp has performed and directed numerous projects and analyses undertaken on behalf of utility companies, short line railroads, bulk shippers, and industry and trade associations. Examples of studies which he has participated in organizing and directing include, traffic, operational and cost analyses in connection with the rail movement of coal, metallic ores, pulp and paper products, and other commodities. He has also analyzed multiple car movements, unit train operations, divisions of through rail rates and switching operations throughout the United States The nature of these studies enabled him to become familiar with the operating procedures utilized by railroads in the normal course of business

Since 1997, Mr. Fapp has participated in the development of cost of service analyses for the movement of coal over the major eastern and western coal-hauling railroads. He has conducted on-site studies of switching, detention and line-haul activities relating to the handling of coal. He has also participated in and managed several projects assisting short-line railroads. In these engagements, he assisted short-line railroads in their negotiations with connecting Class I carriers, performed railroad property and business evaluations, and worked on rail line abandonment projects

Mr Fapp has been frequently called upon to perform financial analyses and assessments of Class I, Class II and Class III railroad companies. In addition, he has developed various financial models exploring alternative methods of transportation contracting and cost assessment, developed corporate profitability and cost studies, and evaluated capital expenditure requirements. He has also determined the Going Concern Value of privately held freight and passenger railroads, including developing company specific costs of debt and equity for use in discounting future company cash flows.

His consulting assignments regularly involve working with and determining various facets of railroad financial issues, including cost of capital determinations. In these assignments, Mr Fapp has calculated railroad capital structures, market values, cost of railroad debt, cost of preferred railroad equity and common railroad equity. He is also well acquainted with and has used the commonly accepted models for determining a firm's cost of equity, including single-stage and multi-stage Discounted Cash Flow models ("DCF"), Capital Asset Pricing Model ("CAPM"), Farma-French Three Factor Model and Arbitrage Pricing Model.

In his tenure with L. E. Peabody & Associates, Inc., Mr. Fapp has assisted in the development and presentation of traffic and revenue forecasts, operating expense forecasts, and DCF, which were presented in numerous proceedings before the STB. He presented evidence applying the STB's stand-alone cost procedures in a number of rail proceedings before the STB. He has also presented evidence before the STB in Ex Parte No. 661, *Rail Fuel Surcharges*, Ex Parte No. 664, *Methodology To Be Employed In Determining the Railroad Industry's Cost of Capital*, Ex Parte No. 664 (Sub-No. 1), *Use of A Multi-Stage Discounted Cash Flow Model In Determining The Railroad Industry's Cost of Capital*, Ex Parte No. 558 (Sub-No. 10), *Railroad Cost of Capital – 2006*, Ex Parte No. 661 (Sub-No. 11), *Railroad Cost of Capital – 2007*, and Ex Parte No. 661 (Sub-No. 12), *Railroad Cost of Capital – 2008*. In addition, his reports have been used as evidence before the Nevada State Tax Commission

VERIFICATION

I, Daniel L. Fapp, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Daniel L. Fapp

Executed on December 10, 2012

5. TIMOTHY D. CROWLEY

Mr. Timothy Crowley is a Vice President of L.E. Peabody & Associates, Inc. Mr. Crowley is sponsoring IPA's opening evidence related to grading in Part III-F and investment in non-road property in Part III-E. Mr. Crowley is also co-sponsoring IPA's opening evidence in Part II-A (quantitative market dominance) and Part III-B (network needed to accommodate the issue and other SARR traffic) with Mr. Thomas D. Crowley and Part III-C (RTC Model) with Mr. William H. Humphrey.

Mr. Crowley received a Bachelor of Science degree in Management with a concentration in Finance from Boston College in 2001 He graduated cum laude. He has been employed by L E Peabody & Associates, Inc. since 2002.

Mr. Crowley has provided analytical support for both marketplace and litigation projects sponsored by L. E. Peabody & Associates. Inc. The analytical support included the gathering, reviewing and analyzing of data from the major Class I railroads, the Surface Transportation Board ("STB") and various other government and public sources. The analyses conducted by Mr. Crowley have included the development of the transportation costs associated with the movement of chemicals. coal and other products to different destinations located throughout the country.

Mr. Crowley is intimately familiar with the component parts of the STB's stand-alone cost constraint including the RTC Model, the track grading model, the equipment investment model, the average total cost ("ATC") model used to separate revenues between the incumbent and the stand-alone railroad, the discounted cash flow ("DCF") model and the maximum mark-up ("MMM") model used to calculate the maximum revenue to variable cost ratio. Mr. Crowley has also assisted in developing the return on road property investment realized by major western railroads for specific rail lines. These studies were used in variable, avoidable, and stand-alone cost analyses. He has forecasted transportation revenues included in transportation contracts entered into by major companies, taking into account the adjustment factors used in specific contracts. Additionally, Mr. Crowley has reviewed virtually all major transportation coal contracts between eastern and western railroads and the major consumers of coal in the United States. The results of this review were presented to the STB in various maximum rate cases.

Mr. Crowley has experience with the STB's *Simplified Standards for Rail Rate Cases* issued in Ex Parte No. 646 (Sub-No. 1). He has undertaken extensive analyses related to the revised guidelines for Non-Coal Proceedings, which incorporates a three benchmark methodology This methodology includes calculations using the Revenue Shortfall Allocation Method (RSAM), in which Mr. Crowley was trained by members of the STB.

Mr. Crowley sponsored the quantitative market dominance evidence in STB Docket No. NOR 42121, *Total Petrochemicals USA, Inc. v. CSXT Transportation, Inc.* and in STB Docket No. NOR 42123, *M&G Polymers USA, LLC v. CSX Transportation, Inc.*

VERIFICATION

I, Timothy D. Crowley, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Timothy D. Crowley

Executed on December 10, 2012

6. **WILLIAM W. HUMPHREY**

Mr. Humphrey is a Project Manager of L.E. Peabody & Associates, Inc Mr. Humphrey is co-sponsoring IPA's opening evidence in Part III-C with respect to the simulation of the SARR's operations using the Rail Traffic Controller ("RTC") Model with Mr. Timothy D. Crowley.

Mr. Humphrey received a Bachelor of Science degree in Sociology with a minor in Computer Science from Boston College in 2001. He has been employed by L E. Peabody & Associates, Inc. since 2002.

Mr. Humphrey has been the lead programmer for numerous cases utilizing the industry-standard RTC Model to simulate various real-world railroad operations over multiple railroads in all parts of the United States. He has used the RTC model to create and analyze railroad systems for capacity analyses, rate cases, infrastructure investment analyses, and various other studies.

Mr. Humphrey has developed Microsoft Visual Studio applications including the Railroad Operations Simulator ("ROS") program used to model railroad operations by using advanced physics models which utilize highly detailed track information, train specific train characteristics, and detailed operational guidelines. He has designed programs that update, analyze, and summarize data originating at the Energy Information Administration Mr. Humphrey has written programs that organize, analyze, manipulate, and summarize mainframe databases containing various industry data.

Mr. Humphrey has provided analytical support for testimony sponsored by L.E. Peabody & Associates, Inc. through the gathering and manipulation of data originating at the Energy Information Administration, the Surface Transportation Board, the Federal Railroad Administration and other publicly available sources. Specifically, these analyses include the development of the delivered costs of fuels to electric utilities and development of detailed track statistics for various railroads located throughout the United States. Mr. Humphrey has conducted extensive research which has been used to support both fuel supply and transportation analyses developed by L.E. Peabody & Associates, Inc.

VERIFICATION

I, William W Humphrey, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

William W. Humphrey

Executed on December 10, 2012

7. JOSEPH A. KRUZICH

Mr. Kruzich is President of J&A Business Consulting, Inc., a firm specializing in information technology and communications. His business address is 209 Violet Drive, Sanibel, FL 33957. Mr. Kruzich is sponsoring evidence related to Information Technology personnel and hardware/software (Part III-D-3-c).

Mr. Kruzich has 38 years of experience in railroad accounting, executive administration and information technology. He began his railroad career with the Chicago, Burlington and Quincy Railroad ("CB&Q") in 1963 as a tax accountant and was promoted to an internal auditor in 1965. In June of 1968, he joined the Atchison, Topeka and Santa Fe Railroad ("ATSF") as a manager of work control procedures. His job responsibilities included reviewing various work procedures and providing recommendations on how the work processes could be improved to achieve a high degree of efficiency. This position provided him an opportunity to become very familiar with various work processes involved in running a railroad.

From 1973 through 1994, Mr. Kruzich held various positions of increasing responsibility at ATSF and its parent As Acting Controller of Santa Fe Air Freight Company and head of industrial engineering at ATSF he performed various efficiency studies in the operating, engineering and mechanical departments. Mr. Kruzich also held the position of Director of Budgets for the entire ATSF operating department including engineering, mechanical, transportation and all support groups, and as such was responsible for coordination of all information technology issues with the Information Systems Department that related to the Operating Department. He was responsible for all administration duties related to the Vice President of Operations office as General Director of Administration and as Assistant to the President of ATSF and Assistant Vice President of Administration in the Information Technology Group he was oversaw all budget, administration, special studies and the corporate measurements systems. These positions provided him with the opportunity to manage a complete process in developing new systems from beginning to end.

In 1995, Mr. Kruzich joined the Kansas City Southern Railway ("KCS") as Vice President of Administration, where he designed profitability, corporate measurement, revenue forecasting and corporate policy systems. In January 1997, he was promoted to Vice President Telecommunications and CIO. As CIO, Mr. Kruzich led the effort in developing the state-of-the-art railroad transportation system known as MCS ("Management Control System"). This system uses some of the most advanced technology such as MQ workflow, Citrix Metaframe, the latest version of Visual Basic and many other technologies and is designed around the business process.

In January 2000, Mr. Kruzich left KCS and formed Forging Ahead Associates, LLC. renamed J&A Business Consulting, Inc This company provides state-of-the-art services in the areas of strategic planning and the development of web sites and e-business initiatives, evaluates the benefits of outsourcing information technology and business processes, and works with clients to make the initial contacts in developing global market opportunities.

Mr. Kruzich graduated from Northeast Missouri State University (Truman University) in 1962 with a Bachelor of Science degree in Business In 1984, he received a Masters of Business Administration in Finance from the Keller Graduate School of Management in Chicago, Illinois

VERIFICATION

I, Joseph A. Kruzich, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Joseph A. Kruzich

Joseph A. Kruzich

Executed on December 5, 2012

8. **VICTOR F. GRAPPONE**

Mr. Grappone is President of Grappone Technologies P.E. P.C., a consulting firm that specializes in rail signaling and communications including train control systems, technical support and systems integration. His business address is 20 Jerusalem Avenue, Suite 201, Hicksville, NY 11801. Mr. Grappone is sponsoring the signals and communications plan and cost evidence in Part III-F-6.

Mr. Grappone obtained a B S. degree in Electrical Engineering from Rensselaer Polytechnic Institute in 1978. Mr. Grappone has over 33 years of experience with railroad and transit signal and communications systems. His career in this field began in 1978, when he was hired by the Long Island Rail Road ("LIRR") as a Junior Engineer. In early 1981 Mr. Grappone was appointed Assistant Supervisor-Signals for the LIRR, where he was involved in the direct supervision of approximately 50 signal construction employees engaged in the installation and revision of signal systems as part of the LIRR's capital program. His responsibilities included task scheduling, personnel evaluation, on-site supervision and material ordering.

In mid-1984, Mr. Grappone was named Staff Engineer-Projects for the LIRR. In this position he was responsible for providing technical support for signal projects. In early 1987 Mr. Grappone was appointed to the position of Signal Circuit Designer for the LIRR, a position he held until late 1995. As Signal Circuit Designer, Mr. Grappone managed the technical aspects of the LIRR's recently-completed computer-based system that controlled the signal system at Penn Station (New York) and in the adjacent territory. This position also involved the direct supervision of a design team consisting of Signal Circuit Designers, Assistant Signal Circuit Designers and Draftsmen. In this position, Mr. Grappone was also responsible for the application of new technology to signal systems. Specific tasks included:

- Development of specifications for vital microprocessor-based systems for signal applications;
- Implementation of formalized procedures for performing FRA-mandated tests for signal systems;
- Development of a PC-based graphical control system; and
- Implementation of the first use of programmable logic controllers (PLC's) for the supervisory control functions.

From late 1995 to early 2001, Mr. Grappone held other positions involving signal and communications controls systems at the LIRR, including Acting Engineer – Signal Design, Project Manager responsible for developing and implementing a corporate signal strategy to direct all LIRR signaling efforts over a 20-year period, Principal Engineer – Signal Maintenance and Construction, and Principal Engineer – CBTC In the latter position Mr. Grappone was responsible for the management and technical direction of the LIRR's Communications Based Train Control (CBTC) program. In all of these positions, Mr. Grappone was responsible for signal and communications matters involving LIRR's lines that had heavy volumes of both passenger and freight rail traffic.

In May of 2001, Mr. Grappone left the LIRR and formed his own consulting firm, Grappone Technologies, Inc. GTI was reincorporated as Grappone Technologies P.E. P.C. in 2007. Major projects Mr. Grappone and his firm have undertaken include.

- Signal design for the New York City Transit Canarsie Line CBTC project, Auxiliary Wayside System.

- Design of office route verification logic for New York City's ATS (Automatic Train Supervision) project.

- Signal circuit checking for the reconfiguration of Harold interlocking on the Long Island Rail Road under the East Side Access project.

- Preparation of specifications and provision of technical and field support for other signal and communications projects for heavy rail and light rail transit systems in the Northeast.

- Circuit design for signal system revisions associated with the reconstruction of five stations on New York City Transit's Brighton Line.

During the course of his consulting work Mr. Grappone has applied for and obtained two patents involving train control systems, including U.S. Patent #6,381,506 for a programmable logic controller-based vital interlocking system (issued April 30, 2002) and U.S. Patent #6,655,639 for a broken rail detector for Positive Train Control (PTC)/CBTC applications (issued December 2, 2003).

Mr. Grappone has been a member of the Eastern Signal Engineers association since June 1999 (inactive member since June 2001). He is presently a member of the Institute of Electrical and Electronics Engineers, Rapid Transit Vehicle Interface Committee Working Group 2. CBTC; the Communications-Based Train Control User Group; and the FRA's Rail Safety Advisory Committee, Positive Train Control Working Group.

VERIFICATION

I, Victor F. Grappone, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Victor F. Grappone

Executed on December 6, 2012

9. <u>GENE A. DAVIS</u>

Mr. Davis is presently employed by Stantec, Inc., a national engineering firm based in Atlanta, GA, as Senior Railway Engineer in the Rail Division. His business address is 3160 Main Street, Duluth, GA 30096. Mr. Davis is sponsoring IPA's Opening Evidence in Part III-D-4 related to the SARR's maintenance-of-way ("MOW") plan and annual MOW operating expenses.

Mr. Davis has been with Stantec since January 2, 2012. Prior to joining Stantec, Mr. Davis served nearly 10 years as Director, Transportation Engineering for R L. Banks & Associates, Inc. ("RLBA") Mr. Davis joined RLBA in 2002, after 18 years of experience with Norfolk Sothern Railway ("NS")

At NS, Mr. Davis held positions of increasing responsibility within the Engineering Department spanning management and engineering of railroad track structures. bridge and building inspection, track/facilities condition assessment, maintenance, rehabilitation. design and construction, as well as railroad operations. Mr. Davis has planned, scheduled and supervised numerous large track projects, such as tie renewals, rail installation, track resurfacing, shoulder cleaning and undercutting operations, structure upgrading and grade/subgrade stabilization. He has supervised numerous bridge and culvert rehabilitation projects including complete renewals, extensive tunnel repairs and tunnel portal reconfigurations. He was responsible for creating capital and operating budgets at NS, and working within them. He has managed tasks at all levels of engineering responsibility. including third party contract work on many projects as well as emergency response and repair.

Mr. Davis's specific positions at NS included Assistant Track Supervisor on the Pocahontas and Virginia Divisions from 1985 to 1987, in which position he performed FRA track inspections and remedial repairs to track structures, and coordinated program maintenance work and contract service work on the track structure. His territory on the Pocahontas Division encompassed trackage used to transport a high volume of coal and other traffic in the Bluefield and Welch areas of West Virginia; specifically, he was responsible for 34 miles of double and triple track mainline as well as Bluefield Yard. His Virginia Division responsibilities included seven miles of double track mainline and NS's key export coal terminal at Lamberts Point, VA as well as Portlock Yard in the Norfolk terminal.

From 1987 to 1994, Mr. Davis was a Track Supervisor on NS's Lake and Pocahontas Divisions, and his territories encompassed substantial mainline trackage in Ohio (Lake Division) and West Virginia (Pocahontas Division). As track Supervisor Mr. Davis performed FRA track inspections and supervised daily MOW activities as well as maintenance and remedial repairs to the track structure via rail gang, tie and surfacing work, and he coordinated contract work including rail grinding and undercutting.

From 1994 to 2000, Mr. Davis served as Bridge and Building Supervisor on NS's Georgia Division In a territory spanning 500 miles, including the terminals at Savannah and Augusta, GA, he performed inspections and supervised maintenance repairs and new construction by company forces of drainage structures including bridges and culverts as well as NS-owned buildings in his territory.

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From 2000 to 2002, Mr Davis served as Assistant Division Engineer-Bridges on NS's Pocahontas Division, in which position he was responsible for drainage structures (bridges and culverts) in a 1,300-mile (route) territory covering parts of Virginia, West Virginia. Kentucky and Ohio. He coordinated and facilitated new construction (when applicable), inspection and maintenance of existing drainage structures, remedial repairs to tunnel structures including portal upgrades, solicited bids for repairs by contractors, and performed repairs to roadway buildings using company forces. His territory included over 24 total miles of various bridge types. 8,000 culverts of varying types, 20 total miles of tunnels, and 16 total miles of slide fences

At RLBA, Mr. Davis worked on various railroad engineering projects for private and public entities in various states. Among other projects, he was engaged by the Oregon International Port of Coos Bay (OIPCB) to conduct a physical inspection of the right of way and estimated rehabilitation and maintenance costs of a Rail America Subsidiary, Central Oregon and Pacific Railroad ("CORP"), in connection with the Port's successful feeder line application to the STB to acquire the CORP's line and facilities between Coos Bay and Eugene, OR. Subsequently, after OIPCB acquired the corridor, Mr. Davis assisted OIPCB to return the line to active rail service. In addition to working full-time with RLBA, Mr. Davis worked part-time for the Western New York & Pennsylvania Railroad (WNYP) as its Engineer of Bridges and Structures.

Mr. Davis obtained a Bachelor of Science degree in Civil Engineering from Tennessee Technological University in 1983. and a Master of Business Administration from Georgia Southern University in 1997. He is a Registered Professional Civil

Engineer in Virginia, and continues to be an FRA-certified track inspector. He has been a member of the American Railway Engineering and Maintenance of Way Association ("AREMA") since 1996 and one of its predecessor organizations (the Roadmasters' Association), and is past Chairman of AREMA Committee 18 (Light Density & Short Line Railways) as well as being a member of Committee 12 (Rail Transit).

VERIFICATION

I, Gene A Davis. verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Gene A. Davis

Executed on December 5, 2012

10. **<u>HARVEY H. STONE</u>**

Mr. Stone is founder and President of Stone Consulting, Inc., with offices at 324 Pennsylvania Avenue West, Warren, PA 16365. Mr. Stone is sponsoring IPA's Opening Evidence in Part III-F regarding SARR construction costs (other than for earthworks/grading and signals/communications).

Stone Consulting is a consulting firm providing comprehensive engineering design services to railroad and other industries on a nationwide basis. Mr. Stone began his career working for the U.S. Army Corps of Engineers in permitting, design and construction inspection. He then worked for two years for a construction contractor and 28 years for a regional engineering firm. He was president of that firm for 16 years. He formed Stone Consulting & Design, Inc., a national firm specializing in railroad design and operations in 1996. Mr. Stone sold the company to TranSystems Corporation in 2007 and was employed by TranSystems until repurchasing the company in 2010.

Mr. Stone and his firm have handled large projects involving railroad freight and passenger feasibility studies, railroad track and structure design, and civil works projects in more than 20 states. He is frequently called upon to prepare preliminary engineering feasibility studies for industrial development and rail construction projects involving federal and state grants; most of the projects he has recommended as feasible have been funded and constructed. Stone Consulting, Inc. recently assisted in the start-up of the Saratoga & North Creek Railroad, under FRA passenger compliance standards set forth at 49 C.F.R. Parts 238 and 239. Mr. Stone was responsible for all track inspections and repairs as the chief engineer for the railroad and his firm currently acts as Chief Engineer for all of the Iowa Pacific Railroad holdings in the USA.

Mr. Stone has a Bachelor of Science degree in civil engineering from Rensselaer Polytechnic Institute. He is a registered Professional Engineer in 31 states. He is a member of the American Council of Engineering Companies (ACEC), the American Railway Engineering and Maintenance of Way Association (AREMA) and the American Society of Highway Engineers through which he has obtained invaluable exposure to the many changes in engineering technology and standards over the years. Mr. Stone is the former chairman of ACEC's Quality Management Committee and a past president of the Bucktails Chapter of the Pennsylvania Society of Professional Engineers.

VERIFICATION

I, Harvey H. Stone, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Harvey H. Stone

Executed on December 4, 2012

11. JOHN L. AGUILAR

Mr. Aguilar is a Civil Engineering Associate with the Los Angeles Department of Water and Power. Mr. Aguilar is sponsoring portions of IPA's Opening Evidence in Part I, Part II, Part III-C-2-c-vii, and Part III-D-3-b. Specifically, Mr. Aguilar is sponsoring the portions of IPA's Opening Evidence that relate to certain background facts (Part I-B), qualitative market dominance (Part II-B), and certain SARR operations and operating expense matters involving IPA's railcar maintenance center at Springville, Utah.

Mr. Aguilar is a coal transportation specialist As a Civil Engineering Associate for the Los Angeles Department of Water and Power, Mr. Aguilar's primary responsibilities for the past eleven years have consisted of negotiating, managing and administering contracts for the delivery of coal to IPP. In this capacity, Mr. Aguilar has extensive experience with securing new coal transportation and supply contracts, administering the contracts on a daily basis, and resolving issues that arise relating to such contracts. He is also familiar with the activities performed at IPA's Springville railcar maintenance center.

VERIFICATION

I, John L. Aguilar, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

John L. Aguilar

Executed on December 12 2012

12. **LANCE LEE**

Mr. Lee is a Fuel Supply Engineer for the Intermountain Power Agency, and is employed by the Los Angeles Department of Water and Power. Mr. Lee is sponsoring portions of IPA's Opening Evidence in Part II. Specifically, Mr. Lee is sponsoring the portions of IPA's Opening Evidence that relate to qualitative market dominance (Part II-B).

Mr. Lee has over twenty five years of experience working at electric utilities and has held various positions including oil and gas plant engineer, coal supply engineer, coal asset manager and fuel supply engineer.

Mr. Lee's past responsibilities have included the negotiation and management of coal supply contracts. In that context. Mr. Lee has been routinely involved in all aspects of the process – from determining IPA's coal requirements to issuing Requests For Proposals, evaluating bids and negotiating terms for new contracts, to their day-to-day administration. Mr. Lee has also acted as the management liaison for mines which have been co-owned by the Intermountain Power Agency. In addition, Mr. Lee has assisted with negotiating new rail transportation contracts or amendments and is familiar with the significant terms of each of IPA's rail transportation arrangements

In his current position, Mr. Lee continues to be extensively involved in negotiating, managing and administering coal supply contracts and is engaged in all aspects of IPA's fuel supply matters.

VERIFICATION

I, Lance Lee, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Lance Lee

Lance Lee

Executed on December 12th, 2012

13. VAN STEWART

Mr. Stewart is employed by Intermountain Power Service Corporation ("IPSC") as Transportation Coordinator based at the Intermountain Generating Station ("IGS") near Delta, UT. Mr. Stewart is sponsoring the portion of IPA's Opening Evidence in Part III-C-2 (including Exhibit III-C-2) related to the dwell time of coal trains at IGS.

IPSC is an affiliate of IPA which staffs IGS and related facilities, including IPA's railcar maintenance center at Springville, UT. As Transportation Coordinator (a position he has occupied for five years), Mr. Stewart is responsible for overseeing the delivery of coal to IGS, which includes the arrival, unloading and departure of coal trains at IGS and the coordination of these events with UP Mr. Stewart is also responsible for building a monthly schedule of the expected dates/times that empty IPA coal trains will depart the Springville railcar maintenance center to go to their respective loadouts for loading.

VERIFICATION

I, Van Stewart, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Van Stewart

Van Stewart

Executed on November 19, 2012

14. STUART I. SMITH

Mr. Smith is a principal of MillenniuM Real Estate Advisors, Inc., a real estate appraisal and consulting firm with offices at 3204 Tower Oaks Boulevard, Suite 100, Rockville, MD 20852. The specific portions of IPA's Opening Evidence that Mr Smith is sponsoring relate to the appraisal and determination of unit-land values for the right-of-way for the SARR (Part III-F-1). Mr Smith's Report setting forth his methodology, procedures and conclusions is included in the e-workpapers for Part III-F.

Mr. Smith is a Licensed Certified General Appraiser for the District of Columbia, Virginia, Maryland, and Nevada. He has also received a temporary Utah State license for work on this project. He also holds the MAI designation from the Appraisal Institute and is a member of the Royal Institution of Chartered Surveyors (MRICS), and is a licensed real estate broker in the District of Columbia.

Mr. Smith has over 30 years of experience in public and private real estate. He has been with MillenniuM Real Estate Advisors, Inc since 1993 and, in that time, he has provided market value appraisals of commercial office buildings, shopping centers, time-share projects, apartments, hotels, mixed-use projects, congregate housing, industrial properties and special use properties. He has also conducted market studies and highest and best use analyses. Additionally, Mr. Smith has consulted with both private sector clients and Federal agencies regarding a variety of real estate matters.

From 1986 to 1993, Mr Smith was the Co-Manager of the Appraisal Division at the Washington, D.C. office of Cushman & Wakefield. As Manager, Mr. Stuart conducted market value appraisals and offered consulting and brokerage services.

His brokerage transactions included leases to the Peace Corps, the Small Business Administration, the National Science Foundation, and the General Services Administration

Mr. Smith was Executive Director of the GSA/Public Building Service from 1984 to 1986. In this position, he was responsible for nation-wide activities regarding financial reporting, the GSA-rent program, capital budgeting, performance management, and administration. Prior to that, from 1983 to 1984, Mr. Smith was Director of the Office of Budget and Finance of the U S. Customs Service. In his capacity as Director, Mr. Smith was responsible for Service-wide financial activities.

From 1977 to 1983, Mr. Smith served as Senior Examiner, Office of Management and Budget, Executive Office of the President of the United States. As Senior Examiner, Mr. Smith was responsible for government-wide civilian real estate issues and for reviewing and making recommendations on the nationwide operations of the General Services Administration. Prior to working at the Office of Management and Budget, Mr. Smith held various positions with the U.S. Treasury Department.

In addition to his valuation experience, Mr. Smith received a Bachelor of Science in Business and Economics from the University of Maryland. He also did some graduate work in Economics at Georgetown University and received his Masters in Business Administration, Corporate Finance, from American University.

VERIFICATION

I, Stuart I. Smith, verify under penalty of perjury that I have read the Opening Evidence of Intermountain Power Agency in this proceeding that I have sponsored, as described in the foregoing Statement of Qualifications, that I know the contents thereof, and that the same are true and correct. Further, I certify that I am qualified and authorized to file this statement.

Stuart I. Smith

Executed on December 4, 2012